The Chemical Age

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Chemical Trade's Forward Movement

THE Board of Trade returns of chemical overseas trade have for some time promised distinct signs of advance, now in one direction, now in another. These signs are convincingly confirmed in the figures for November, published in this issue, and there can no longer be any serious doubt as to the steady forward movement which is setting in. The imports of chemicals, drugs, dyes, and colours, which at one time had risen to a rather serious level, declined during November by £349,885 as compared with 1926, and by £18,650 even as compared with 1925. Still more positive is the improvement in chemical exports, which advanced from £1,777,322 in 1925 and £1,634,816 in 1926 to £2,278,886 last month. This is an increase over 1925 of £501,564 and over 1926 of £644,070. These figures, of course, apply only to one month, and the monthly comparison is not always the final guide. But, if the eleven months ended November 30 are taken, we find a decline in imports of £71,990, as compared with the eleven months of 1926, while the exports show an increase of £1,208,032. It is clear, therefore, that British chemical trade is now definitely above the level of the disastrous coal strike year, and is well on the way towards the 1925 standard. This will be encouraging news to all engaged in the industry, and should do much to give the spirit of confidence for which the trade has been anxiously waiting for months past.

The decline in imports is spread fairly evenly over the whole range of chemical commodities, though here and there a surprising increase may be noted. For example, bleaching materials imports have increased on the corresponding month of last year from £8,700 to £10,950, borax from £813 to £8,596, calcium carbide from £37,203 to £51,631; the glycerine imports, both crude and distilled, are higher than the figures for 1926 or 1925; there is an advance in sodium nitrate from £13,676 to £104,825; and extracts for tanning are up from £73,436 to £124,311. These are the exceptions to the general decline in chemical imports. In some cases the decline is striking. For instance, coal tar products, which amounted to £238,796 in November of last year, have fallen to £11,002, an appreciably lower total than the £17,308 for the more normal November of 1925. The principal decreases are in acetic acid (£53,473 to £45,630), tartaric acid (£8,444 to £3,982), potassium nitrate (£100,056 to £60,731) and alizarine (from £5,834 in 1925 and £2,427 in 1926 to £1,576).

In the export section one of the most important advances again is in sulphate of ammonia, which has increased from £180,538 in 1925 and £83,798 in 1926 to the large figure of £201,151. The chief increases are in trade with Spain and the Canaries, and with Japan, the latter representing no less than £71,424 in November against a negligible figure of £5,642 in the previous November. An enormous and most gratifying increase is shown in coal tar products. In 1925 the November figure was £99,259 and in 1926 £64,253; for the month just closed the amount was £245,859, the principal increases being in carbolic acid, tar oil, and creosote oil. Glycerine exports, consistently with the increasing imports, are down, but potassium compounds have advanced from £16,273 to £28,130, while sodium compounds have reached the splendid total of £435,676, as compared with £301,618 in 1925 and £257,905 in 1926. Dyes and dyestuffs show a strong improvement over both 1925 and 1926, the export figure being the considerable sum of £73,325, while painters' colours and materials, always a firm section of our export trade, stand well above both the 1925 and 1926 levels.

We have dealt with these figures in more detail than usual, because the more they are examined the more encouraging they appear. They show that we are steadily recovering control of the principal sections of chemical export trade, and that with the efforts of Sir Alfred Mond and others to secure permanent peace in industry, and the steady discrediting of the small but noisy mischief-making element that uses Labour as a convenient flag for its own purposes, the prospects are beginning at last to look really good.

The Institute Jubilee

In 1877, when the Institute of Chemistry was first incorporated, modern chemistry had barely emerged from its cradle. In the fifty years which have since elapsed, the whole face of the science has changed, and has become enormously complicated. What changes has the profession of chemistry undergone in the same period? At the time of the formation of the Institute, it was not thought to be a profession which could be hopefully entered by a young man, and the members of the profession were not held in the greatest esteem either by the public or by the powers that be. Nowadays all this is changed. Chemistry has taken its rightful place as one of the most important of man's activities. Even now, perhaps, the chemist does not wholly receive the meed of recognition which should be his, but even so he is treated with great respect.

Much of this change for the better in the status of the profession is due to the work of the Institute. The qualifications which it bestows command the highest respect, not only in this country, but abroad. Representing, as it now does, a body between five and six thousand in number, it naturally speaks with considerable authority, and in official and other circles its counsels are highly esteemed. Its very existence makes for a high level of professional ethics. In spite of its manifold activities, however, it works so quietly and unobtrusively that those who mistake noise for efficiency are apt to wax impatient. The best way in which to consider the work of the Institute is, perhaps, to think of the state of affairs which would exist in its absence; it then becomes clear that it is fulfilling, with the highest efficiency, many functions which could not be carried out by any other body. There is another point to be kept in mind. At the age of fifty, an official body is quite youthful. Other scientific bodies, which command the ear of the general public to a perhaps greater extent, are much older, and there can be little doubt that time plays an important part in matters of this kind. Let us, therefore, be grateful for the achievements of the past, and look forward hopefully to still greater ones in the future. At this time it is fitting that all chemists should pay their meed of gratitude to the men who have worked incessantly to raise the status of the profession.

One of the latest activities of the Institute, and one which is deserving of close attention, is the establishment of local sections in various places throughout Great Britain and in various parts of the Empire. Even now this movement is not fully appreciated, but it has immense possibilities. This is especially true in view of the greater and greater part which chemistry plays in industry. Within the last few years, a great and wealthy textile industry (that of artificial silk) has been built up, an industry which is essentially chemical in its nature; in the near future, the world will probably depend for its fuel oil supply on the chemical treatment of coal; while other examples will readily occur to the reader. It is not, in fact, too much to say that the increase of civilisation is largely bound up with the increased application of chemistry to human affairs. In these circumstances, the prestige of the chemist must necessarily increase, as he becomes, more and more, the key man of industry. A year or two ago, it seemed (even to the most optimistic) that far too many chemists were being produced. Even now, it is necessary for those who desire to enter the profession to consider the situation carefully. The position is, however, much more hopeful than it has been for some time past. New industries are springing up, almost daily, which need the chemist; while the older industries are finding, more and more, how manifold are his uses. Added to this is the unimpeachable evidence of the trade statistics that chemical industry is moving in the direction of greater prosperity. It is not too much to hope that the near future will bring to the chemist an increase alike of professional standing and of material prosperity.

A Title for Chemists

It would appear, from a hint dropped by Mr. L. Guy Radcliffe, that the problem of a distinguishing title for chemists may be near solution. Mr. Radcliffe, who is chairman of the Manchester and District Section of the Institute of Chemistry, was speaking at the local celebration of the Institute jubilee. He pointed out that even now the profession of chemistry was not recognised by the public as such a profession ought to be, and specifically referred to the confusion between chemists and pharmacists. The difficulty (as Mr. Radcliffe pointed out) is that the pharmacists have had their right to the title "chemist" recognised by Act of Parliament. A vast amount of attention has been devoted to the subject, and hitherto the problem of finding a title which would distinguish the chemist from the pharmacist has proved insoluble. Mr. Radcliffe made the interesting announcement that the Council of the Institute had had the matter under consideration, and were, he believed, on the eve of acquiring for the chemist, as they understood him, provided he was a member of the Institute, a distinguishing title that would be recognised. An official pronouncement on the subject from the Institute will be awaited with great interest, especially in view of the provision in regard to membership.

No European Combine

A warning was conveyed in The Chemical Age of last week, as well as in some previous issues, against a too hasty acceptance of reports relating to European chemical combines, and especially to a supposed Franco-Anglo-German dyestuffs cartel. General conversations, it was pointed out, there have been, and no doubt will be again, but they have led to no definite conclusion, and our information at the time was that no such conclusions were likely. This is now fully borne out by what amounts to an authoritative statement that no agreement on a dyestuffs cartel has been reached, or is in fact contemplated. Neither is there any foundation for a Paris report that an international combine is pending between manufacturers of nitrogenous products. In this connection synthetic fertilisers are linked with artificial silk, though hitherto we have not associated works of the Billingham type with the production of artificial silk.

Our readers have been reminded again and again of the utterances of Sir Alfred Mond, which make it clear that the field for British chemicals, using that

term in the widest sense, is the British Empire. Just as Sir William Alexander, in some earlier negotiations respecting an Anglo-German dyestuffs agreement, laid it down that nothing must be allowed to imperil the independence of the British industry, so the great chemical combine recently formed, while it may from time to time wish to negotiate on points of common interest, cannot depart from the definitely imperial position it has taken up from the outset. In these reports from the Continent, which are accepted with astonishing readiness over here, the fact seems to be perpetually overlooked that large British chemical interests are under the direction of Imperial Chemical Industries, Ltd., which was formed to consolidate and develop the chemical resources of the British Empire. The chairman of the combine has stated on innumerable occasions what were the reasons which created the merger, and the policy which would be pursued.

The sanguine forecasts about the completion of negotiations regarding the nitrogen industry are now definitely stated to be as ill-informed as the reports of agreements on dyestuffs. In financial circles the view is crystallising that these constant reports of agreements completed or negotiations nearing completion are not unconnected with the fact that the German chemical industry will shortly be in want of further capital, which it hopes to acquire in London and New York. In no unfriendly way we had, before the issue of this disclaimer, suggested this as the most likely explanation, and it seems to some extent borne out by the report that the I. G. Farbenindustrie contemplate a debenture issue of 250 million marks (£12,500,000) to finance new developments.

Chemical Salaries and Fees

An interesting statement may presently be expected from the Institute of Chemistry relating to chemical salaries and conditions. A questionnaire on the subject was recently issued to the Fellows and Associates, and although about 1,000 returns have been received, it has been considered desirable to extend the time in order to obtain further replies and make the return as complete as possible. One may venture to commend the appeal for the fullest information, because it is only by each member contributing the particulars of his own appointment that the return can be made really representative. In this case there is no reason for withholding the knowledge, for each member may be sure that no improper or indiscreet use of it can possibly be made.

From correspondence received by the Institute of Chemistry from public analysts and official agricultural analysts, there still appears to be great reluctance on the part of local authorities to revise the conditions of appointments. Many officials are working under 1914 conditions, although the market value of their fees has greatly decreased, and all the expenses of practice—assistants' salaries, clerical work, apparatus, materials, and rent—are much higher than before the war. In view, again, of the increased duties which the new Fertilisers and Feeding Stuffs Act will impose on analysts, the Institute is advising official agricultural analysts to seek for a just and reasonable modification of the terms of their appointments.

Books Received

Textbooks of Physical Chemistry. Edited by Sir William Ramsay and F. G. Donnan.—The Phase Rule and Its Applications. By Dr. Alexander Findlay. London: Longmans, Green and Co., Ltd. Pp. 326. 10s. 6d.

Standard Catalogue of Scientific Apparatus, 1928. Vol. Chemistry. London: Baird and Tatlock (London), Ltd.

Archimedes, or The Future of Physics. By L. L. Whyte. London: Kegan Paul, Trench, Trubner and Co., Ltd. Pp. 94. 2s. 6d.

The South American Handbook. 1928. London South American Publications, Ltd. Pp. 746. 2s. 6d.

A System of Qualitative Analysis for the Rare Elements. By Arthur A. Noyes and William C. Bray. London: Macmillan and Co., Ltd. Pp. 536. 21s.

The Calendar

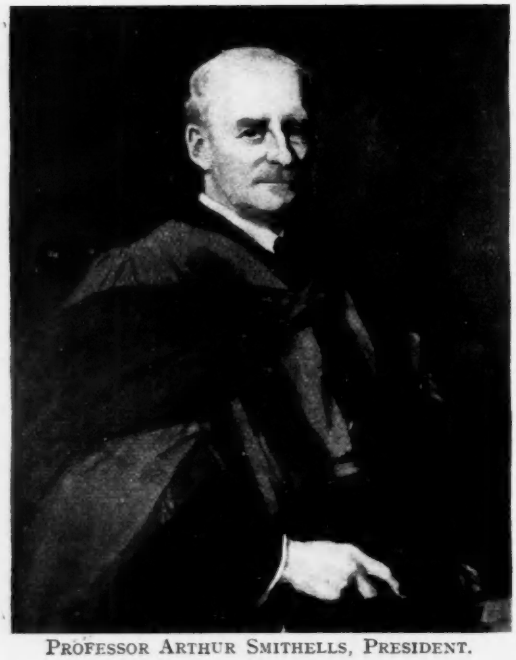
Dec. 19	Chemical Industry Club: "A Trip to the Persian Oilfields." J. W. Williamson. 8 p.m.	2, Whitehall Court London, S.W.1
21	Society of Chemical Industry (Glasgow Section): The Ramsay Chemical Dinner. 7 p.m.	The Trades' House, Glasgow
1928 Jan. 2	Institution of the Rubber Industry (London Section): "Synthetic Resins." A. A. Drummond.	Engineers' Club, Coventry Street, London
5	Society of Dyers and Colourists (West Riding Section): "Some Causes of Uneven Dyeing." H. R. Hirst.	Midland Hotel, Bradford
6	Society of Chemical Industry (Manchester Section): "The Action of Caustic Alkali on Partially Methylated Cellulose—The Heat of Reaction and Absorption." F. C. Wood and A. C. Alexander.	Manchester
9	Institute of Chemistry (Manchester Section): "Some Inter-relations of Chemistry and Physiology." Professor H. S. Raper.	Royal Exchange Buildings, St. Ann's Square, Manchester
10 11 12	Physical Society and Optical Society: Eighteenth Annual Exhibition.	Imperial College of Science and Technology, South Kensington
11	Ceramic Society: "Dust Inhalation with special reference to Silicosis." Professor E. L. Collie.	North Staffordshire Technical College, Stoke-on-Trent
12	Oil and Colour Chemists' Association: "Some Points in the Manufacture of Zinc Oxide." R. G. Daniels.	8, St. Martin's Place, Trafalgar Square, London
12	Society of Dyers and Colourists (Midlands Section): "Action of Acids on Wool." S. R. Trotman and Dr. E. R. Trotman. 7.30 p.m.	University College, Nottingham
16	University of Birmingham Chemical Society: Presidential Address by Professor W. N. Haworth.	University, Birmingham
17	Society of Chemical Industry (Glasgow Section): "The Fuel Problem." Dr. C. H. Lander. 7 p.m.	39, Elmbank Crescent, Glasgow
18	Society of Glass Technology: 2.30 p.m.	Manchester
19	Optical Society: Ordinary Meeting. 7.30 p.m.	Imperial College of Science and Technology, South Kensington, London
19	Chemical Society: 8 p.m.	Burlington House, Piccadilly, London
19	Institute of Chemistry and Society of Chemical Industry (Edinburgh Sections): Discussion on "The Separation of Solids and Fluids." 7.30 p.m.	North British Station Hotel, Edinburgh
19	Institute of Metals (Birmingham Section): "Heat Resisting Alloys." T. H. Turner. 7 p.m.	Engineers' Club, Waterloo Street, Birmingham
20	Society of Dyers and Colourists (Scottish Section): Dr. H. Levinstein.	Glasgow
20	Society of Chemical Industry (Liverpool Section): "The Production and Refining of Cane Sugar." Geoffrey Fairrie. 6 p.m.	University, Liverpool

The Jubilee of the Institute of Chemistry

An Account of the Institute's History and Activities

In connection with the Jubilee celebrations of the Institute of Chemistry (which was incorporated in 1877) a reception was held on Wednesday evening, and a dinner on Thursday. At the Institute on both days there was an exhibition of documents and portraits of historical interest, of special interest being the sections devoted to Joseph Priestley and to the Institute itself. At the New Gallery Cinema, Regent Street, London, a number of films of chemical interest were shown, including films dealing with coal and its products, heavy chemicals, steel manufacture, nitrate of soda, etc. Below are given some notes on the history of the Institute.

THOUGH the need for an association closely connected with the interests of the professional chemist seems to have suggested itself before, the real origin of the Institute seems to date from May 31, 1872, when the late Professor Edward Frankland, then president of the Chemical Society, occupied



PROFESSOR ARTHUR SMITHELLS, PRESIDENT.

the chair at a dinner in honour of Professor Cannizzaro, the Faraday Lecturer for the year. In the course of his speech the president drew attention to the necessity for an institute which would be to chemists what the Colleges of Surgeons and Physicians were to the medical profession, the Institution of Civil Engineers to civil engineers, and the Inns of Court to the legal profession. In 1875 a meeting was held to discuss the advisability of forming such an institution, and an organisation committee was appointed.

Formation and Incorporation

Subsequently the subject was very thoroughly aired in discussions which took place in the chemical and scientific press. It was at first suggested that the Chemical Society should carry out a scheme for the organisation of professional chemists, and in 1876 a committee was appointed to confer with the council of the Society on a "Scheme for the organisation of Practising Chemists." The matter was most carefully considered by the council of the Society, but, after taking counsel's opinion, they came to the conclusion that there were insuperable difficulties in the way of carrying out the suggestion, and that a separate organisation was desirable.

(It should be remembered that the Chemical Society had not been founded for the purpose of conferring qualifications, but for the promotion "of chemistry and those branches of science immediately connected with it," or, as provided in its Royal Charter, "for the general advancement of Chemical Science.")

At a further meeting, in 1876, it was decided "that, having regard to the limited powers of the Chemical Society under its Charter, it is desirable that an Association be formed that shall be independent of the Chemical Society." A new organisation committee was formed, and it is of interest to note that its members included Professor (then Dr.) H. E. Armstrong, Mr. C. T. Kingzett, and Mr. R. R. Tatlock, all, happily, still with us. The Memorandum and Articles of Association were drawn up, and application was made to the Board of Trade for registration as "The Institute of Professional Chemists." Objection to this title was taken by the Pharmaceutical Society and others, and the promoters then changed the title to that of "The Institute of Chemistry." On October 2, 1877, the Institute of Chemistry of Great Britain and Ireland finally became incorporated by licence of the Board of Trade. Professor Edward Frankland was elected first president, and of the first council, Messrs. C. T. Kingzett and R. R. Tatlock still remain. The earliest work of the organisation was conducted from an office at 32, Walbrook, London, while later a room was taken in the premises on Somerset House Terrace, adjoining King's College.

The Royal Charter

During the tenure of office of the second president, Professor Abel, the question of the reincorporation of the Institute under Act of Parliament or by Royal Charter was under consideration, and on the election of the third president, Professor Odling, the matter was further prosecuted. For various reasons, however, difficulties arose as regards the presentation of a Parliamentary Bill, and it was decided to petition for a Charter. The necessary petition was first presented on July 15, 1884, and after much consideration and revision the Royal Charter was granted on June 13, 1885. In an address at an inaugural meeting in the following November, the president, Professor Odling, pointed out that by the granting of a Charter official recognition had been given to chemistry as a profession.

Among its presidents the Institute has numbered some of the most eminent of British chemists, the surviving past presidents being Professor J. M. Thomson (1900-1903), Professor P. F. Frankland (a son of the first president) (1906-1909),

MR. R. B. PILCHER, REGISTRAR.

Sir Herbert Jackson (1918-1921), Mr. A. Chaston Chapman (1921-1924), and Professor G. G. Henderson (1924-1927). On this page are reproduced a portrait of the present president, Professor A. Smithells, and a photograph of the registrar and secretary, Mr. R. B. Pilcher, who has filled his post since 1900.

Conference of Institution of Chemical Engineers

Papers and Discussion on Refrigeration, the Weighmeter, and Silica Products

Last week we published an account of Mr. Norman Swindin's paper on "Submerged Flame Burners," read before the Institution of Chemical Engineers on Wednesday, December 7. On Thursday and Friday, December 8 and 9, there were papers and discussions on refrigeration, the weighmeter, industrial lighting, and the properties of silica and fireclay products. Notes on these, and on the subsequent discussions, are given below.

On Thursday, December 8, at the Chemical Society, London, the Institution of Chemical Engineers continued its conference, the day opening with three papers and a discussion on refrigeration.

Mr. G. W. Daniels read a paper on "The Design of Refrigerating Plants," dealing with the plant as a whole, and touching especially on those features to which the chemical engineer should pay special attention. The paper dealt with fundamental principles, thermodynamics, the total heat chart, actual and ideal machines, pre-cooling of the liquid refrigerant, multiple effect compression, multi-pressure systems of working, the cascade system, refrigerants, supercharging, and heat transmission and its rate.

The second paper was by Mr. L. Chew, and dealt with "The Practical Aspect of Mechanical Refrigeration as Applied to the Chemical Industry." It was concerned in part with a detailed analysis of heat transfers and condensers.

Mr. R. J. Mitchell dealt with "Electrical Automatic Refrigerators for Domestic Use." He exhibited a series of lantern slides describing the constructional details of the Frigidaire, the Kelvinator, and the Electrolux electrical machines. At the same time, he made a few comments upon the general question of domestic refrigeration and of the shortcomings of the ordinary ice box, and referred to the advantages from the point of view of health of keeping food in a fresh condition. The ordinary ice box, he said, was frequently more of a danger than an advantage, because the temperature in it was higher than was imagined, and was frequently too high for keeping food fresh.

Discussion on Refrigeration

Dr. F. A. Wilcox said that one of the difficulties in connection with refrigeration machines was that they were supplied by refrigerating engineers—who probably knew all about the subject—to chemical engineers who did not know anything about the refrigerating part. At the same time, it might be said that refrigerating engineers did not know a great deal about the chemical side, and it was co-operation between the two that was necessary to obtain the desired results. It was essential that the people who made the refrigerating machinery should know something about the chemical processes involved, on the one hand, and for the chemical engineers who used the plant to know something of the engineering side of the manufacture and of refrigeration processes. His own experience had confirmed this because he had constructed a number of refrigerating plants in co-operation with the users and the results had been quite satisfactory.

Dr. R. Seligman said he had been making experiments recently in order to provide apparatus which would meet the recent food regulations, particularly with regard to cream. He had found that the average temperature obtained with an ice box of 50° F. could not be relied upon, and yet it had been shown that the difference between 50° and 56° F. had an important influence upon the keeping of food. There seemed to be something critical in that range. Incidentally, Dr. Seligman said he had been studying these conditions at a large dairy in Edinburgh, and added that the conditions of milk supply in Edinburgh were the best in the world, not excluding even the United States.

Mr. Wilcox, interposing, said he regarded as better for people to have an ice box, with all its troubles, than to have no means at all of keeping food. He did not believe that the difference between 50° and 56° F. was so important as might be imagined.

Dr. Seligman said that for the purpose of preserving cream 56° F. was no use at all. Mr. J. T. V. Crosfield agreed with Dr. Seligman that a temperature of from 50° to 56° F. did have an effect upon food, and his experience has been that it was impossible to keep an ice box permanently at a temperature of 50° during the part of the year when refrigeration was most necessary. On the other hand, with a refrigerating machine, it was possible to regulate the temperature in a way quite impossible with the ice box.

Mr. N. Swindin suggested that the Institution should form a Committee to collect all the available information regarding heat transfer and prepare some sort of report upon the subject. Heat transfer problems were so varied and so full of mystery and obscurities, and so much information was available in a scattered form, that if it could be collected and collated in a convenient form it would be very valuable.

Dr. F. A. Wilcox pointed out that the refrigeration committee of the Scientific Research Board had already embarked upon a series of investigations, the first portion of which would have for its object the collection of information as suggested by Mr. Swindin. It had been proposed to put down special plant at Teddington for the purpose of these investigations, but it was felt that a great deal of valuable work could be done in the first place on a small scale, and it was hoped to present a preliminary report before putting down large refrigerating plant.

Chemical Engineering and Refrigeration

Prof. J. W. Hinchley, speaking with regard to the early remarks of Dr. Wilcox, said that the chemical engineer ought to know sufficient about refrigeration processes to prevent himself being fooled by any salesman of a refrigerating plant firm when it came to purchasing plant, and that was one of the objects of special education for chemical engineers. Refrigeration was one of the ordinary problems of the chemical industry, and it was getting bigger every day. Mr. Daniels had truly said that very little was known about refrigeration, but the papers would enable the chemical engineer to tackle many problems that arose. Curiously enough, there were very few good books on the subject which were accessible to the ordinary reader, and Mr. Chew's paper was extremely interesting for the reason that it gave practical examples relating to the working of refrigeration plants. All three papers would be of the greatest possible assistance in extending the use of refrigeration on a larger scale than was at present the case in this country.

The "Weighmeter"

"The 'Weighmeter': An Apparatus Designed for Measuring the Weight and Volume of Receptacles," was described at the meeting on Friday, December 9, by Messrs. R. G. Parker, D. N. Jackman, and J. N. Vowler. This instrument (described in English Patent No. 259,662) was primarily designed for controlling the laundry washing process. It was necessary that it should be robust, simple, and inexpensive; that no actual weighing operation should be necessary; that it should indicate the weight (the volume, the specific gravity being known) of the contents, despite the fact that they consist of solid (fabric), free liquid, and liquid soaked up by the fabric—the whole being in vigorous motion. The principle on which it was based was the hydrostatic weighing machine, embodying a pressure cell to be placed permanently underneath the feet of the piece of plant, in such a way that the whole or a definite fraction of the weight to be measured rested upon it.

The authors stated that weighmeters were now employed in conjunction with washing machines varying from 1,550 lb. to 7,380 lb. in net weight, and from 2,400 lb. to 10,380 lb. in total weight when loaded. They would appear to be applicable to the approximate control of quantities in many types of plant, and, in particular, chemical plant.

New Impurity found in Ether

Vinylethyl ether, an unsaturated compound, has been detected in commercial ether through its bromination product. This is announced in a letter to *Nature* by Dr. H. King, who has been working on the subject at the National Institute for Medical Research, Hampstead. The importance of the announcement lies in the fact that it is more and more held to be desirable that for anæsthetic purposes a pure diethyl ether is required. Work is being continued with a view to determining the mechanism of formation of the vinylethyl ether.

Chemical Trade Returns for November

A Boom in Exports

THE Board of Trade Returns for November indicate that imports of chemicals, drugs, dyes and colours for the month were valued at £1,239,853, a decrease of £349,885 and of £18,650 on November, 1926 and 1925 respectively; exports amounted in value in November to £2,278,886, an increase of £644,070 and of £501,564 on 1926 and 1925 respectively; while re-exports of imported goods amounted to £58,490, a decrease of £19,883 and of £38,941 on 1926 and 1925. For the eleven months ended November 30, 1927, imports amounted to £13,990,854, a decrease of £71,990 on the corresponding period in 1926 and an increase of £902,766 on 1925; exports amounted to £21,405,575, an increase of £1,208,032 on 1926 and a decrease of £406,162 on 1925; and re-exports amounted to £937,797, an increase of £20,673 on 1926 and a decrease of £178,006 on 1925. The detailed returns are as follows:—

Imports

	Quantities. Month ended November 30, 1926.	Quantities. Month ended November 30, 1927.	Value. Month ended November 30, 1926. £	Value. Month ended November 30, 1927. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic ..... tons	1,220	1,064	53,473	45,630
Acid Tartaric .... cwt.	1,709	845	8,444	3,982
Bleaching Materials ,,	9,480	11,905	8,790	10,950
Borax..... ,,	700	10,484	813	8,596
Calcium Carbide... ,,	53,870	105,605	37,203	51,631
Coal Tar Products, not elsewhere specified value	—	—	238,796	11,002
Glycerine Crude .. cwt.	504	696	2,158	2,312
Glycerine Distilled. ,,	60	295	300	1,360
Red Lead and Orange Lead ..... cwt.	3,410	2,237	6,264	4,003
Nickel Oxide..... ,,	—	—	—	—
Potassium Nitrate (Saltpetre) .....cwt.	11,179	9,514	12,604	9,967
Other Potassium Compounds .....cwt.	382,234	196,076	100,056	60,731
Sodium Nitrate ... ,,	22,240	193,613	13,676	104,825
Other Sodium Compounds .....cwt.	80,765	36,724	52,786	20,877
Tartar, Cream of .. ,,	6,440	2,683	22,206	12,116
Zinc Oxide .....tons	878	904	30,179	29,722
All other sorts....value	—	—	357,756	249,269
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	174,304	202,885	14,292	12,826
Bark Cinchona ....cwt.	1,746	182	7,962	975
Other sorts .....value	—	—	275,971	213,672
DYES AND DYESTUFFS, ETC.—				
Intermediate Coal Tar Products .....cwt.	25	82	448	935
Alizarine ..... ,,	56	83	2,427	1,576
Indigo, Synthetic.. ,,	—	1	—	7
Other Dyestuffs ... ,,	3,783	4,119	99,797	93,221
Cutch ..... ,,	2,375	2,311	4,616	3,856
Other Dyeing Extracts,,	1,793	2,676	5,966	12,478
Indigo, Natural ... ,,	—	—	—	—
Extracts for Tanning ,,	66,404	115,531	73,436	124,311
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, and Blanc Fixe .....cwt.	61,587	63,969	14,689	13,693
White Lead (dry).. ,,	14,966	12,927	28,601	17,492
Other Sorts ..... ,,	79,983	85,085	116,029	117,838
Total of Chemicals, Drugs, Dyes, and Colours .... value	—	—	1,589,738	1,239,853

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ....cwt.	1,543	19,604	2,291	6,218
Acid Tartaric ..... ,,	1,957	2,303	10,223	14,026
Ammonium Chloride (Muriate) .....tons	262	482	7,204	10,476
Ammonium Sulphate—				
To France .... tons	—	—	—	—
,, Spain and Canaries tons	346	4,308	3,906	40,897
,, Italy ..... ,,	70	370	825	3,664
,, Dutch East Indies tons	—	32	—	319
,, Japan ..... ,,	496	7,363	5,642	71,424
,, British West India Islands and British Guiana tons	184	1,262	2,109	12,295
Other Countries ,,	6,398	7,472	71,316	72,552
Total .... ,,	7,494	20,807	83,798	201,151

	Quantities Month ended November 30, 1926.	Quantities Month ended November 30, 1927.	Value. Month ended November 30, 1926. £	Value. Month ended November 30, 1927. £
Bleaching Powder (Chloride of Lime) .....cwts.	34,407	79,731	14,622	24,305
COAL TAR PRODUCTS—				
Anthracene .....cwt.	8	—	8	—
Benzol and Toluol galls.	479	59,455	68	2,957
Carbolic Acid .... cwt.	6,324	18,262	11,667	33,256
Naphtha .....galls.	4,011	17,568	468	1,024
Naphthalene .....cwt.	243	738	308	489
Tar Oil, Creosote Oil, etc. galls.	402,173	4,955,970	13,690	181,035
Other Sorts .....cwt.	58,401	39,986	38,044	27,098
Total ....value	—	—	64,253	245,859
COPPER, Sulphate of .tons	1,005	3,293	22,543	70,549
DISINFECTANTS, ETC. cwt.	37,758	39,131	103,777	95,173
GLYCERINE, Crude .. ,,	2,282	905	8,372	2,461
Glycerine Distilled .. ,,	15,107	11,272	71,181	51,731
Total .... ,,	17,389	12,177	79,553	54,192
POTASSIUM COMPOUNDS—				
Chromate and Bichromate .....cwt.	1,019	3,397	1,842	6,127
Nitrate (Saltpetre). ,,	1,501	1,332	2,900	2,546
Other Sorts ..... ,,	1,129	4,515	11,531	19,457
Total .... ,,	3,649	9,244	16,273	28,130
SODIUM COMPOUNDS—				
Carbonate .....cwt.	325,927	499,050	101,032	145,225
Caustic ..... ,,	85,028	241,132	65,772	169,580
Chromate and Bi-chromate .....cwt.	2,684	3,292	3,791	4,417
Sulphate, including Salt Cake .....cwt.	128,588	397,991	17,405	44,565
Other Sorts ..... ,,	56,549	63,015	69,905	71,889
Total .... ,,	598,776	1,204,480	257,905	435,676
ZINC OXIDE .....tons	74	111	3,299	4,403
All Other Sorts ...value	—	—	304,736	330,322
Total of Chemical Manufactures value	—	—	970,477	1,520,540
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	160,568	253,706	16,839	25,284
Other Sorts .....value	—	—	274,762	284,006
Total .... ,,	—	—	291,601	309,290
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	4,321	8,807	43,085	63,970
Other Sorts ..... ,,	5,485	8,945	7,511	9,355
Total .... ,,	9,806	17,752	50,596	73,325
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, and Blanc Fixe .....cwt.	5,820	1,881	2,060	752
White Lead (dry).. ,,	3,001	5,797	6,430	9,788
Paints and Colours, in paste form .....cwt.	46,432	58,228	107,155	115,538
Paints and Enamels Prepared .....cwt.	32,230	40,041	98,742	132,701
Other Sorts ..... ,,	53,370	65,152	107,755	116,952
Total .... ,,	140,844	171,099	322,142	375,731
Total of Chemicals, Drugs, Dyes and Colours .....value	—	—	1,634,816	2,278,886

Re-Exports

	Quantities. Month ended November 30, 1926.	Quantities. Month ended November 30, 1927.	Value. Month ended November 30, 1926. £	Value. Month ended November 30, 1927. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Tartaric .....cwt.	74	57	442	468
Borax..... ,,	9	393	11	352
Coal Tar Products value	—	—	415	11
Glycerine Crude ..cwt.	—	—	—	—
Glycerine, Distilled ,,	—	—	2	—
Potassium Nitrate (Saltpetre) .....cwt.	83	88	118	114
Sodium Nitrate ... ,,	200	104	121	56
Tartar, Cream of .. ,,	318	466	1,342	2,221
All Other Sorts ...value	—	—	16,303	11,048
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	10,140	28,614	1,031	2,641
Bark Cinchona ....cwt.	280	259	1,360	1,051
Other Sorts .....value	—	—	47,208	31,070
DYES AND DYESTUFFS—				
Cutch .....cwt.	825	528	1,418	825
Other Dyeing Extracts cwt.	203	465	833	2,943
Indigo, Natural ... ,,	13	15	414	480
Extracts for Tanning ,,	1,569	993	2,138	1,312
PAINTERS' COLOURS AND MATERIALS .....cwt.	1,108	1,180	4,419	3,594
Total of Chemicals, Drugs, Dyes, and Colours .....value	—	—	78,373	58,490

The Dead Sea Concession

The History of An Application

To the Editor of THE CHEMICAL AGE.

SIR,—In your issue of December 3, page 508, reference is made to the forthcoming award of the Dead Sea Concession. May I draw your attention to an incomplete statement as regards one of the group of applicants for the said concession and ask you to be so good as to rectify the omission ?

In your issue you state that one of the applications was made by Mr. W. H. Tottie of London, director of the Canadian Merchants and General Trusts, Ltd. The said tender was submitted jointly in the names of Mr. R. H. Bicknell, M.I.C.E., a London consultant engineer ; Dr. Annie Homer, M.A., F.I.C., a research chemist, formerly Fellow of Newnham College, Fellow of the University of Toronto, and Beit Memorial Fellow ; and Mr. W. H. Tottie, who was the financial agent for Mr. Bicknell and Dr. Homer.

It may be of interest to you and your readers to know that Mr. Bicknell and Dr. Homer were the first to place a fully prepared scheme before the British Government for the commercial exploitation of the salts of the Dead Sea in the interests of the Empire. In 1916, Mr. Bicknell and Dr. Homer were mutually interested in the development of schemes for the production of chemical fertilisers. They were keenly alive to the world's shortage of potash, of which Germany then held the monopoly. They turned their attention to the possibility of the development of the resources of the Dead Sea as a supply of potash to meet the pressing needs of the British Empire, and for the future breaking of the potash monopoly that had proved so valuable to Germany as a war weapon and as a means of successful barter in peace time.

During 1916–17 they investigated the matter in full detail, and prepared and elaborated a most comprehensive scheme which they were able to place before the proper authorities, the Potash Control Department of the Ministry of Munitions, in the year 1918. . . . They had been advised " unofficially " to have their proposition thoroughly well arranged before presenting it to the Government and asking officially for a concession.

Their scheme, a war-time proposition to break the German potash monopoly, was ready for immediate development by the early part of 1918, when, in due course, it was placed before the Potash Controller, who, after some months spent in criticism and deliberation of, apparently, so fantastic a proposition, ultimately gave his sanction for their presentation of a formal application for a concession from the Foreign Office. Whereupon, on October 4, 1918, Mr. Bicknell (acting on behalf of himself, Dr. Homer and others) presented a formal application for a concession to work the Dead Sea mineral resources and for permission to send out, forthwith, a commission of engineers and scientists for confirmatory work to satisfy the financial backers.

The application was refused on political grounds. It was subsequently renewed during 1919–23, both to the Foreign and Colonial Offices, and was, as often, refused on the ground that nothing could be done in the matter, neither could commissions be sent out to work on the spot until peace with the belligerents had been signed. Peace with Turkey was not signed until 1926.

Government explorations made during 1923–25 amply confirmed the assertions made by Dr. Homer and Mr. Bicknell in 1917–18, but the government geologists in charge of the operations, apparently did not realise the magnitude of the industry that could be established.

In 1925, to the surprise of Mr. Bicknell and Dr. Homer, after their long association with the work and the assurances from time to time that, when the concession could be granted, their scheme would have priority of consideration, the Crown Agents advertised in the public press for tenders for the Dead Sea Concession. Mr. Bicknell and Dr. Homer were urged to renew their application. This they did in conjunction with their then financial agent, Mr. W. H. Tottie, a London merchant banker.

The tender, thus submitted by Mr. Bicknell, Dr. Homer and Mr. Tottie, embodied the work of Mr. Bicknell and Dr. Homer, work that had been in progress since 1916, and was designed to meet the desires of the Governments concerned and the somewhat altered conditions of the money markets, which necessitated a considerable limitation of the scope of the enterprise for the first few years of the undertaking. The tender was revised in 1926 at the request of the Crown Agents, and re-submitted on December 31, 1926.

In the press, recently, stress has been laid on the early work of Major Tulloch, who has made a joint application with Mr. Novomeysky. I understand that Major Tulloch was with the forces in Palestine and was in communication with the Secretary of the War Cabinet in 1918 as to the utilisation of the Dead Sea ; furthermore, that he and/or a geologist began a series of investigations and enlisted the aid of chemists and physicists. But a further period of two or more years elapsed before Major Tulloch was in a position to propose a practical scheme to the British Government. I also understand that his plans were thus prepared in detail by 1920 or thereabouts, and an application for the fully prepared scheme was laid before the Colonial Office in 1922 (June 15, 1922). I have seen a copy of this document, and it would appear that his proposals were not so far-reaching as those already placed before the Government by Mr. Bicknell and Dr. Homer in 1918.

Recently, it has been my pleasure to meet Dr. Thomas H. Norton, the distinguished American chemist, who has also tendered for the Dead Sea Concession, and it was mutually to our satisfaction to find that we, the only professional chemists amongst the applicants, had worked out, on almost identical lines, a proposition by which, if given a free hand, we could have proceeded at once to the production of at least 1,000,000 tons of potassium chloride annually, at a cost per ton that would be only a fraction of that operating in the present monopolist industries. Dr. Norton also had similar views to those of Mr. Bicknell and myself in regard to the development of other important chemical industries.

Ever since 1916, Mr. Bicknell and I have worked assiduously in our efforts to bring the Dead Sea scheme to fruition, and, for this reason, it seems unjust that our connection with the development of the scheme should be omitted from any statement of the case, whether " official " or other. Mr. Bicknell died suddenly in April of this year ; my present protest is made on behalf of his executors and of myself. I trust you will be able to rectify the omission in your paper of the 3rd inst.

—I am, etc.,

ANNIE HOMER, M.A., D.Sc., F.I.C., etc.

7, Auson Road, Tufnell Park, W.7,
December 11.

Indian Chemical Notes

[From Our Indian Correspondent.]

Indian Rubber Production

The rubber statistics published by the Government of India show that the number of plantations in India and Burma in 1926 was 1,171, covering 203,654 acres, against 1,070 with an area of 201,222 acres in the preceding year. Of the total area under cultivation, 50 per cent. was in Burma, 31 per cent. in Travancore State, 10 per cent. in Madras, 6 per cent. in Cochin, 2 per cent. in Coorg, and 1 per cent. in Mysore. The total production of raw rubber during the year is reported as 23 million lb. (Hevea 22·8 million lb., Ceara 35,000 lb., and Ficus elastica 156,000 lb.). The total production in 1925 was nearly 20 million lb. The exports of rubber in 1926–7 amounted to 23 million lb., of which about 45 per cent. was taken by the United Kingdom.

Cement Imports into India

It is gratifying that India has again begun to consume larger quantities of cement, and imports from the United Kingdom are steadily increasing. This is due to the fact that a number of new works have again been taken up for construction. It should be remembered that for three successive years the imports from the United Kingdom have been declining, from 99,000 tons in 1924–25 to 94,000 tons in 1925–26 and to 76,000 tons in 1926–27. But if we take the figures of import month by month from January last, we find a steady improvement: 4,500 tons in January, 6,900 in February, 13,900 in March, 9,400 in April, and 11,200 tons in May. Imports from other countries show a decline. The total imports from all countries during the five months amount to 63,300 tons, as against 56,000 tons in the corresponding period of 1926, and 49,100 tons in 1925.

Indian Sugar Trade

The principal feature of the sugar import trade in India in 1926–27 was the very large increase in the imports of beet sugar, from 43,000 tons in 1925–26 to 175,000 tons in 1926–27, and a small decline in the imports of cane sugar, from 688,000 tons in 1925–26 to 648,000 tons. The decline in the latter is wholly due to shorter arrivals from Java, while imports from the United Kingdom increased from 2,000 to 5,000 tons, and from the United States from 2,000 to 11,000 tons. Imports of beet sugar from Germany have increased enormously, and imports from Belgium, Hungary, and Czechoslovakia also show considerable increases; but imports from the United Kingdom show a slight decline to 3,670 tons.

Growing Chemical Trade

It is a matter of satisfaction that the chemical import trade of India is steadily growing. The returns for the first quarter of the current fiscal year show further advance, as the total trade during the period amounted in value to 67 lakhs as against 58 lakhs and 48 lakhs in the corresponding periods of 1926-27 and 1925-26. Of course, the soda compounds preponderate. Acids do not show any advance, because the principal acid required, sulphuric, is now manufactured in sufficient quantities in India, the total annual production amounting to about 68,000 tons. The fact that, in spite of this and the growing manufacture of chemicals of various kinds in India, the demand for them is increasing, as indicated by increasing imports, shows that the capacity of India to consume such goods has increased very largely in recent years.

The Demand for Protection

On account of this growing import trade, manufacturing concerns in India complain that their products are seriously handicapped. The Dharamsi Morarji Chemical Co., of Bombay, some time ago addressed to the Government of India a request for the reference of the question of the necessity of granting protection to the Indian chemical industry to the Tariff Board for investigation. The Government of India have replied to the effect that so long as the industry was not able to obtain locally large supplies of sulphuric acid practically as a by-product in the course of other manufactures there was little prospect of its being able to meet competition in the final products unaided, and that therefore there was no need to refer the question to the Tariff Board. S. G. W.

The Colouring of Cold Cured Rubber

At a joint meeting of the Manchester Sections of the Society of Dyers and Colourists and the Institution of the Rubber Industry held on Friday, December 9, Mr. W. E. Sanderson, A.I.C., dealt with the question of the colouring of cold cured rubber. The lack of published information on this subject was pointed out. Very considerable progress had been made in rubber technology within the past few years, not only in the improved physical properties of rubber in general, for which the use of the organic accelerators of vulcanisation was largely responsible, but also in the great variety of brilliant colours that were now available.

These were mostly produced with pigment dyes or lakes of organic dyes, and the methods of making and applying them in the cold cure process were described. Rubber could be dyed with the water soluble dyes, but the colouring was only superficial, and, generally speaking, it was essential to use dye pigments which were thoroughly incorporated in the rubber mass.

The colouring of rubber latex was also dealt with. This was coagulated in the usual way by means of acetic acid, giving coloured rubber which could be subsequently vulcanised or deposited electrolytically by the new "Anode Process." The presence of metallic salts of copper, manganese and iron was very objectionable, not only in the ingredients of the rubber mixing, but also in proofed material. Under certain conditions, the rubber perished and the cotton became destroyed. An interesting theory of the cause of tendering in sulphur black dyed cotton used for rubber proofings was put forward.

In conclusion, the question of the fastness of coloured rubber was dealt with and a plea for closer collaboration between the dyer, the colour maker and the rubber manufacturer was made.

Rubber Industry Exhibition

The first exhibition of the Institution of the Rubber Industry was held in the Central Hall, Westminster, on Wednesday. The latest developments in rubber production and rubber goods were shown by over forty important manufacturers and dealers. Of particular interest was the display of Imperial Chemical Industries, Ltd., of chemicals and colours for use in the electrical deposition of rubber by the anode process. The display included colours for latex, special dispersed colours, slow, medium and special accelerators, and organic chemicals for the rubber industry. Among other firms exhibiting chemicals for use with rubber were Barnett, Smith and Ashby, Ltd., who had showed carbon black, mineral colours and chemicals, the Anchor Chemical Co., Ltd., colours and pigments, and H. W. D. Ward, Ltd., who showed pigments. Joseph Robinson and Co., Ltd., were showing an 84 inch mixing mill. Other exhibits included a range of articles ranging from rubber toys and household articles to rubber tyres, buffers and a liquid rubber adhesive.

New Director of I.C.I.

The directors of Imperial Chemical Industries, Ltd., announce that M. Ernest John Solvay has been elected a member of the Board. M. Solvay is the son of M. Armand Solvay (chairman of the well-known Belgian firm of Solvie et Cie.), and grandson of M. Ernest Solvay, the inventor of the ammonia soda process and the founder of the firm of Solvay et Cie. It was through the co-operation of M. Ernest Solvay and Dr. Ludwig Mond that the ammonia soda process was introduced into England, and this led to the formation of Brunner, Mond and Co., Ltd. Solvay et Cie. have been represented on the Board of Brunner, Mond and Co., Ltd., for many years, and friendly relations have existed between the two companies since the commencement.

Retirement of Mr. Napier Sutton

Mr. F. Napier Sutton, F.I.C., F.C.S., Inspector under the Alkali, etc., Works Regulation Act (Ministry of Health) for the Eastern and South Eastern Counties District, retires under the age limit on the 20th inst. He joined the Department (then Local Government Board) in April, 1885, as assistant to the then Chief Inspector, the late Mr. Alfred E. Fletcher, and was appointed Sub-Inspector in 1892 and Inspector in 1908, and thus completes a service of 42 years and 9 months.

Society of Public Analysts

Proceedings at the Last Meeting

An ordinary meeting of the Society of Public Analysts was held at the Chemical Society's Rooms, Burlington House, London, on Wednesday, December 7, the president, Mr. E. Richards Bolton, being in the chair.

Certificates were read for the first time in favour of: G. R. Barnes, B.Sc., C. A. Bassett, B.Sc., A.I.C., Ethel I. Beeching, M.Sc., A.I.C., H. P. Buttrick, A.I.C., C. O. Harvey, B.Sc., A.R.C.S., A.I.C., H. V. Horton, B.Sc., A.I.C., T. Howard, M.Sc., A.I.C., H. McK. Langton, M.A., B.Sc., A.I.C., W. A. N. Markwell, W. G. Messenger, B.Sc., A.I.C., E. J. Newby, B.Sc., H. S. Rooke, M.Sc., A.I.C., C. T. Symons, B.A., F.I.C., D. R. Thomas, M.B., Ch.B., S. Sera, and W. A. Whitley. Certificates were read for the second time in favour of: A. H. Bateman, B.Sc., A.I.C., A. O. Blackhurst, M.D., W. Clayton, D.Sc., F.I.C., C. W. Cornwell, B.Sc., A.I.C., and T. Riley, A.I.C. The following were elected members of the society: L. V. Cocks, A.I.C., F. Dixon, B.Sc., A.I.C., D. M. Freeland, A.I.C., D. Geoghegan, C. G. Hyde, A.R.C.S., F.I.C., V. J. Tilley, F.I.C., L. Wild, B.Sc., and H. A. Williams.

Demonstrations

Demonstrations of apparatus were given. Dr. G. W. Monier-Williams demonstrated an apparatus for determining benzoic acid in foods. The apparatus was devised for carrying out the author's method, based on the principle of passing benzoic acid vapour over moist metallic magnesium, to form a soluble magnesium benzoate, which could be subsequently extracted with hot water. A sodium flame for polarimetric work was shown by Messrs. T. McLachlan and A. W. Middleton. A pencil composed of sodium salts is used with a Bunsen burner to obtain a brilliant sodium flame.

Papers Read

"Oil Bromide Films and Their Use in Determining the Halogen Absorption of Oils" was the subject of a contribution by Mr. Harold Toms. This work was done under the Analytical Investigation Scheme. Oil films exposed to an atmosphere of bromine were found to absorb the halogen quantitatively, and, after removal of the excess of bromine at a low temperature, the bromine absorption could be determined gravimetrically. The method, which gave accurate results with 20 to 50 mg. of an oil, had been used to determine the composition of the insoluble bromide of linseed oil, after removal of the bromine, by prolonged treatment with nascent hydrogen. The iodine values, calculated from the bromine absorbed, agreed with those obtained by the Wijs method, except in the case of tung oil, the gravimetric bromine absorption of which stood in a constant relationship to the iodine value. The brominated films of several oils (linseed, menhaden, soya, perilla, etc.) showed characteristic differences in appearance.

Messrs. Middleton and Hymas discussed "Tests for Impurities in Ether. I.—Tests for Peroxides." Only organic peroxide (probably dihydroxydiethyl peroxide) was, they said, to be expected in ether purified for anæsthesia. The sensitiveness of the various tests for peroxide (which rendered the ether less stable) was compared, and two new tests were described. The ferrous thiocyanate test was recommended for official adoption, and a colorimetric limit for the amount of peroxide was proposed. An improved method of preparing the ferrous thiocyanate reagent was described, and it was shown that the test, which gave no coloration with pure ether, was not too stringent for practical purposes.

The subject of "Arsenic in Coated Papers and Boards" was dealt with by Dr. H. J. Stern. In general, uncoated papers and boards, and the adhesives used, were unlikely to contain a dangerous amount of arsenic. Mineral pigments were also usually satisfactory, but some of the synthetic inorganic pigments might be dangerous. Thus, a paper coated with an arsenical green might contain over 6 g. of arsenious oxide per square metre. Some of the lakes of synthetic dyes, notably Magenta and Methyl Violet, precipitated with arsenious oxide contained dangerous amounts of arsenic (*e.g.*, 40·5 per cent. of arsenious oxide). Certain dyes, notably Pigment Scarlet 3B and Orange II, might contain 50 to 100 parts of arsenic per million. A provisional arrangement was in force among the users of pigments for this purpose, limiting the amount of arsenic to 10 parts per million, and the boards in use seldom contained more than 2 or 3 parts per million.

Chemical Matters in Parliament

Coal Research

In replying to Lieut.-Cdr. Kenworthy (House of Commons, December 8), Lord E. Percy stated that the practical result of the work of the Department of Scientific and Industrial Research on hydrogenation had been to establish that British coals available in quantity, could be converted into oil by methods which, he understood, were now being thoroughly investigated from the commercial point of view by prominent British firms; and the practical result of its work on low temperature carbonisation had been to develop a process which was shortly to be tried out on a manufacturing scale. As regards other processes on which the Department had reported favourably from a technical point of view, he could only say that reports in the Press indicated that some of these were being extended in practice. The business of the Department was to increase their knowledge of the laws and processes which were likely to have an industrial application, and to publish the results in a form easily available to all who are interested.

The Dead Sea Concession

In answer to a question by Captain Foxcroft (House of Commons, December 12), Mr. Ormsby-Gore said he was not aware of the dates on which Mr. Rutenburg and Mr. Novomeysky acquired Palestinian citizenship, but would ask for the information. Palestinian subjects were not British subjects. In answer to a question by Col. Howard-Bury, he stated that negotiations with Major Tulloch and Mr. Novomeysky were being carried on with them as principals and not as representatives of any persons or groups. Col. Howard-Bury said that what he wanted to know was whether there w . a group behind Mr. Novomeysky, and was he merely a stalking horse.

Extraction of Oil from Coal

In reply to Col. Day (House of Commons, December 12), the Duchess of Atholl stated that the question of publication of the results hitherto obtained at the Fuel Research Station, Greenwich, was now under consideration, but it was probable that publication would be delayed until the investigations had been further advanced. No English process for the conversion of coal into oil by hydrogenation had been brought to the notice of the Fuel Research Board. As regarded low temperature, besides the work undertaken at the Fuel Research Station, investigations had been conducted into, and reports had been made on the following English processes:—the "Parker" plant at Barugh; the Midland Coal Products, Ltd., plant at Netherfield; the "Fusion" rotary retort; the "Freeman" multiple retort of the British Oil and Fuel Conservation, Ltd.; the "Crozier" retort. The report on the last mentioned was now in the Press.

Appointments Vacant

An Additional Research Fellow in the Department of Glass Technology of the University of Sheffield.—The Registrar. December 23.

A Teacher of Rubber Technology in the Northern Polytechnic, Holloway, London, N.7.—The Clerk.

A Junior Assistant for a Government Laboratory.—The Commandant, Experimental Station, Porton, Wiltshire. Further details will be found in our advertisement columns, p. xviii.

A Principal for the Technological Institute, Cawnpore, to act also as head of the department of general applied chemistry.—The Secretary to the High Commissioner for India, General Department, 42, Grosvenor Gardens, London, S.W.1. January 15.

A Lecturer in Inorganic and Physical Chemistry at the Sir John Cass Technical Institute, Jewry Street, Aldgate, London, E.C.3.—The Principal. December 31.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

86. (*Shale*).—"We should be glad if you could put us in touch with firms exporting shale."

From Week to Week

SIR ARTHUR DORMAN, chairman of Dorman, Long and Co., sailed for South Africa this week.

THE DUNLOP RUBBER CO., LTD., has acquired the ground lease of St. James' House, St. James' Street, London, W.

CHEMICAL IMPORTS TO CZECHOSLOVAKIA in October were valued at 44,000,000 crs., the value of imports for the period, January to October, being 334,000,000 crs.

CHEMICALS, LTD., has been organised in Montreal to act as the sole importer into Canada of solvents, plasticizers and nitrogen products manufactured by the I. G. Farbenindustrie.

A FIRE WAS CAUSED AT the varnish works of J. T. Dobbs and Sons,. Ltd., on Thursday, December 8, by a vat of varnish boiling over and being set alight. Two workmen were injured and considerable damage was done.

MR. E. V. BOWATER has been elected chairman of both W. V. Bowater and Sons, Ltd., and of Bowater's Paper Mills, Ltd., which is controlled by the former company. This election is consequent upon the retirement of Sir T. Vansittart Bowater.

A PAPER ON "Oil Building for Lubricating and Allied Purposes" was read by Mr. E. A. Evans, chief chemist of C. C. Wakefield and Co., Ltd., at a meeting of the Belfast branch of the Association of Engineering and Shipbuilding Draughtsmen on December 8.

CHARGED WITH CONSPIRING TO DEFRAUD such persons as might receive prospectuses and pamphlets issued by the Chalk Fuel Power Gas and By-Products Corporation, Ltd., Sir C. B. Herne Soame, Col. E. O. Eaton and Robert Harley were at the Mansion House on Thursday, December 8, committed for trial.

A MOVING FILM CAMERA which photographs gas and dust coal in mine explosions has been invented by J. E. Tiffany, explosives engineer of the Pittsburgh Experimental Station, United States Bureau of Mines, according to a report made to the American Chemical Society by G. St. J. Perrott and D. B. Gawthrop.

A DEPUTATION from the Unionist Agricultural Committee of the House of Commons was received by the Minister of Agriculture on Tuesday on the question of the Nauru phosphates. The deputation was introduced by Sir G. Courthope. Mr. Grey, secretary of the Fertilisers' Association, spoke on behalf of the superphosphate manufacturers.

ROYAL INSTITUTION arrangements include: The juvenile Christmas lectures, to be delivered by Professor E. N. da C. Andrade on "Engines," commencing on Thursday, December 29. The general courses of lectures before Easter include two by Dr. J. J. Fox on "Optics and Chemistry," and four by Sir Ernest Rutherford on "The Transformation of Matter."

A SERIOUS FIRE BROKE OUT on Tuesday at the premises of Brandrum Brothers and Co., Ltd., white lead, sulphur and saltpetre manufacturers, of Rotherhithe, London, S.E. Firemen fought the flames for over an hour, a chemical foam extinguisher being employed, but were severely handicapped by the dense fumes and smoke. The fire was confined to one building.

REPLYING TO A TOAST at the dinner of the Imperial College of Science and Technology, on Monday, Sir Alfred Mond said that while research was being done in this country at last, he was dissatisfied with the progress it was making. Funds were not being provided on the scale they should be. There was a definite shortage of scientific men in this country. In his own company they had decided to approach headmasters with a view to selecting bright boys when still at school. Those boys would be assured that, if they would go through a university and obtain first-class degrees, they would not have to look for a job.

THE FIRST INTERNATIONAL EXHIBITION of Light and Heat in medicine, surgery, and hygiene, organised by the *British Journal of Actinotherapy*, was opened at the Central Hall, Westminster, on Tuesday by Lieut.-Col. F. Fremantle, in the absence of Sir Alfred Mond. He referred in his address to the application of artificial sunlight to the testing of the fastness of dyestuffs and to its use in the oils and fats industry. Among the many exhibitors of artificial arc, mercury, vapour, and similar lamps in use in actinotherapy were Kelvin, Bottomley, the and Gaird, Ltd., the British Hanovia Quartz Lamp Co., Ltd., and the Electrical Carbon and Equipment Co.

A WORLD CONGRESS OF CHEMISTS, the first in fifteen years, is urged editorially by *Industrial and Engineering Chemistry*, one of the official organs of the American Chemical Society. The International Union of Pure and Applied Chemistry, the journal declares, should convoke a truly democratic conclave of science as quickly as possible. The Union has changed its statutes so as to enable it to summon such a gathering, but they do not become effective until its next meeting, which is to be held in Holland, in July, 1928. The journal asserts that the Union has added little to scientific knowledge, and that, if it is to live, its purpose must be enlarged effectively to promote science in all nations.

THE ANGLO-SCOTTISH CHEMICAL CO., LTD., was recently admitted to membership of the Glasgow Chamber of Commerce.

ANTIMONY IS TO BE DEVELOPED in New Brunswick by a new process which is said to give a recovery of 97 per cent. of the stibnite which is contained in the ore.

UNIVERSITY NEWS.—*Liverpool:* Mr. Hadyn Williams, B.Sc., has received the degree of Ph.D. for research work.—*Oxford:* Mr. J. H. Wolfenden, M.A., has been appointed to a lectureship in chemistry at Exeter College.

A QUANTITY OF PERFUMERY CHEMICALS and two storeys of a building were destroyed at a fire on the premises of John Tye and Son, perfumery manufacturers, Caledonian Road, London, on Friday, December 9.

"THE INDOLE GROUP OF THE ALKALOIDS" was the title of a paper given by Professor Robert Robinson to members of the Nottingham branch of the Society of Chemical Industry recently, at University College, Nottingham.

ON AND AFTER DECEMBER 15 the address of the British Commercial Secretaries for Germany (Mr. J. W. F. Thelwall and Mr. C. J. Kavanagh) will be Tiergartenstrasse 17, Berlin, W.10, and all communications intended for those officers as from that date should be sent to the new address.

SENSIBLE HEAT DISTILLATION, LTD., announce that the first refinery for treating crude primary oil from British coal, from which lubricating oils, petrols, kerosene, and phenols are obtained, is to be erected immediately in England for a British firm. This, it is pointed out, marks a new era in oil refining in Great Britain, for, with the exception of that produced at the Anglo-Persian Oil Co.'s refinery, practically all oil is imported and is refined by foreign labour.

PARTICULARS ARE PUBLISHED, for information only, and not as an invitation to subscribe for shares, of an issue of 49,493 shares of £1 each of the English Beet Sugar Corporation, thereby completing the issue of its entire authorised capital of £500,000. The company owns a factory at Cantley, Norfolk, capable of dealing with 200,000 tons of sugar-beet annually. The company also manages the Kelham Factory of Home Grown Sugar, Ltd., under a seven-year agreement expiring on March 31, 1934.

AN INQUIRY into proposals to allow petroleum-laden tank vessels to proceed further up the Thames than Thames Haven was opened on Tuesday by Major T. H. Crozier and Professor J. S. S. Brame. The Anglo-American Oil Co., the British Petroleum Co., and the Glico Petroleum Co., are supporting the proposals, and among the opponents are the Anglo-Saxon Petroleum Co., Shell-Mex, Ltd., The Dominion Motor Spirit Co., Ltd., Sealand Petroleum Co., Ltd., The United Oil Importers, Ltd., Blue Bird Oil Importers, Ltd., and the Motor Owners' Petrol Combine, Ltd., as well as the London County Council, many local authorities and other official bodies.

THE CHANDLER MEDAL, awarded annually by Columbia University in recognition of achievement in chemical science, goes this year to Professor Moses Gomberg, head of the Department of Chemistry in the University of Michigan. The medal was formally bestowed at a national gathering of scientists on December 16, when Professor Gomberg delivered the annual Chandler Lecture on "Free Radicals in Chemistry Past and Present." Professor Gomberg was born in Elizabetgrad, Russia, in 1866. He was educated at the Elizabetgrad Gymnasium and at the University of Michigan. Later he studied in the Universities of Munich and Heidelberg. He is well known for his work on triphenylmethyl and other free organic radicals.

RECENT WILLS INCLUDE:—Professor Archibald Liversidge, who died in September, aged 79 years, left estate of the value of £46,128, with net personalty £39,197. His bequests included his books, prints, pictures, and photographs, as the Master may select, to Christ's College, Cambridge; £100 and his unpublished notes and papers dealing with chemical and scientifical matters to the Chemical Society of London; £2,000 to the University of Sydney, New South Wales, for a scholarship; £1,000 to Christ's College, Cambridge, for a scholarship; and £1,000 to the Royal School of Science for a scholarship; £500 each to the University of Sydney, the Royal Society of New South Wales, the Australasian Association for the Advancement of Science of Sydney, the Chemical Society of London for research lectureships in chemistry; and £500 to Christ's College, Cambridge, for a research lectureship in chemistry and in the English language.—Mr. James Brierley, asbestos mill manager, for 40 years with Turner Brothers Asbestos Co., Ltd., £12,203 (net personalty, £11,283).

Obituary

PROFESSOR PAUL GROTH, of the University of Munich, the eminent crystallographer, at the beginning of December. In addition to much other work he had carried out many researches on the relation of crystal structure to chemical constitution, especially among organic compounds. His compendium, *Die Physikalische Krystallographie*, has been described as the "Beilstein" of crystallography.

MR. W. E. MERRITT, general plant superintendent of the Armour Fertiliser Co., Chicago, on November 19.

References to Current Literature

British

COLOUR.—Colour standardisation and testing in the paint and colour industry. A discussion before the Oil and Colour Chemists' Association. *J. Oil and Colour Chemists' Association*, November, pp. 309–334.

DYESTUFFS.—A general method for the preparation of carbocyanine dyes. F. M. Hamer. *J. Chem. Soc.*, November, pp. 2796–2804.

Colour fastness from the point of view of the user. F. Scholefield. *J. Textile Inst.*, November, pp. P224–229.

GENERAL.—The thermal dissociation of strontium carbonate. E. O. Jones and M. L. Becker. *J. Chem. Soc.*, November, pp. 2669–2676.

The temperature effects of mixing non-aqueous liquids. W. M. Madgin, J. B. Peel, and H. V. A. Briscoe. *J. Chem. Soc.*, November, pp. 2873–2877.

The chemical nature of precipitated basic cupric carbonate. J. R. I. Hepburn. *J. Chem. Soc.*, November, pp. 2883–2896.

The activity of a nickel catalyst. E. J. Lush. *J.S.C.I.*, December 2, pp. 454–456T.

Chemical industries and Merseyside. A. Holt. *J.S.C.I.*, December 2, pp. 439–444T.

ORGANIC.—Beryllium dialkyls. H. Gilman and F. Schulze. *J. Chem. Soc.*, November, pp. 2663–2669.

The two *o*-cyanocinnamic acids. W. Davies and H. G. Poole. *J. Chem. Soc.*, November, pp. 2661–2663.

STEREOCHEMISTRY.—A new stereoisomeride (*trans.*), of hexahydrocarbazole. J. Gurney, W. H. Perkin, jnr., and S. G. P. Plant. *J. Chem. Soc.*, November, pp. 2676–2679.

United States

ADSORPTION.—Adsorption by metallic hydroxides. V.—A comparative study of the adsorptive power of iron, aluminium, and chromium hydroxides for acids and alkali. K. C. Sen. *J. Phys. Chem.*, December, pp. 1840–1841.

APPARATUS.—Apparatus for studying the ignition process of inflammable gas-air mixtures by explosives. G. St. J. Perrott and D. B. Gawthrop. *Ind. Eng. Chem.*, November 1, pp. 1293–1295.

CEMENT.—The combination of lime in Portland cement compounds. W. C. Hansen and R. H. Bogue. *Ind. Eng. Chem.*, November 1, pp. 1260–1264. In the process of Portland cement manufacture, lime and other basic oxides combine with silica and other acidic oxides. The completeness with which lime enters into combination can be measured. In this study there is noted the influence of replacements of magnesia, soda, and potash for lime, and of ferric oxide for alumina, on the temperature required for burning and the completeness of combination of the lime. Only one base composition is employed here; others will be reported later.

COKING.—High throughput characterises new coking process. G. L. Montgomery. *Chem. Met. Eng.*, November, pp. 668–669.

DYESTUFFS.—The physical chemistry of colour lake formation. III.—H. B. Weiser and E. E. Porter. *J. Phys. Chem.*, December, pp. 1824–1838. A study has been made of the mechanism of the formation of alizarin lakes with the hydrous oxides of iron, chromium, and aluminium, and the influence of the concentration of hydrogen ion and other ions on the lake formation process.

GENERAL.—The influence of salts on the optical rotation of gelatin. I.—C. D. Carpenter. *J. Phys. Chem.*, December, pp. 1873–1879.

The partial vapour pressures of benzene-toluene and benzene-ethylbenzene mixtures. T. Bell and R. Wright. *J. Phys. Chem.*, December, pp. 1884–1886.

How to write a specification. C. Kirkbride. *Chem. Met. Eng.*, November, p. 670.

Manufacture of water gas of low specific gravity. L. Stein and L. J. Willien. *Chem. Met. Eng.*, November, pp. 676–677.

The high temperature equilibrium between thorium oxide and carbon. C. H. Prescott, jnr., and W. B. Hincke. *J. Amer. Chem. Soc.*, November, pp. 2744–2753.

The high temperature equilibrium between aluminium oxide and carbon. C. H. Prescott, jnr., and W. B. Hincke. *J. Amer. Chem. Soc.*, November, pp. 2753–2759.

Essential oil in desert plants. I.—Physical constants. M. Adams and R. Billinghurst. *J. Amer. Chem. Soc.*, November, pp. 2895–2897.

GLASS.—Studies on glass. I.—The transition between the glassy and liquid state in the case of some simple organic compounds. G. S. Parks and H. M. Huffman. *J. Phys. Chem.*, December, pp. 1842–1855. The first of a series of papers dealing with the nature of the glassy state.

RESEARCH.—The functions of research. C. F. Kettering. *Ind. Eng. Chem.*, November 1, pp. 1212–1216.

Research as the enemy of stability. C. E. K. Mees. *Ind. Eng. Chem.*, November, pp. 1217–1219.

Miscellaneous

ALCOHOL.—The industrial preparation of absolute alcohol. J. L. Gendre. *Revue Products Chimiques*, November 30, pp. 841–842 (in French).

ANALYSIS.—The volumetric determination of antimony and arsenic. P. E. Winkler. *Helvetica Chimica Acta*, vol 10, part 6, pp. 837–842 (in French).

A micromethod for the determination of magnesium ion in biological liquids and organs. E. Tschopp. *Helvetica Chimica Acta*, vol 10, part 6, pp. 843–846 (in German).

The determination of the constituents of a gaseous mixture containing hydrogen sulphide, carbon dioxide, arsine, phosphine, and acetylene. M. Wilmet. *Comptes Rendus*, November 21, pp. 1136–1138 (in French).

CATALYTIC HYDROGENATION.—A catalyst for hydrogenation in the cold. A test for the mechanism of this catalysis. M. Bourgel. *Bull. Soc. Chimique de France*, November, pp. 1443-1450 (in French).

COMBUSTION.—On the laws of combustion of colloidal powders. III.—H. Muraour. *Bull. Soc. Chimique de France*, November, pp. 1451–1461 (in French).

DYESTUFFS.—The centenary of the discovery of alizarin. A. Wahl. *Bull. Soc. Chimique de France*, November, pp. 1417–1442 (in French).

GENERAL.—The use of gypsum in the manufacture of sulphate of ammonia. P. Baud. *Comptes Rendus*, November 21, pp. 1138–1141 (in French).

The dehydration of aqueous-alcoholic liquids. P. Brun. *Comptes Rendus*, November 21, pp. 1132–1134 (in French).

Researches on the theory of concentrated solutions. IV.—E. Pahlavouni. *Bull. Soc. Chimique Belgique*, November, pp. 533–547 (in French).

ORGANIC.—Sulphonation in basic or neutral medium. The arylsulphonylanilidosulphonic acids ($ArSO_2NHC_6H_4SO_3H$). M. Battegay and A. Schneider. *Bull. Soc. Chimique de France*, November, pp. 1491–1494 (in French).

Some derivatives of the cyclo-octane series. MM. Godchot and Canquil. *Comptes Rendus*, November 28, pp. 1202–1203 (in French).

New observations of a qualitative colour reaction for the Grignard reagent. H. Gilman and F. Schulze. *Bull. Soc. Chimique de France*, November, pp. 1479–1481 (in French).

A new type of acridones: Para-acridones. I. Tanasescu. *Bull. Soc. Chimique de France*, November, pp. 1511–1514 (in French).

The catalytic reduction of nitriles. I.—Some new derivatives of α-camphomethylamine. H. Rupe and L. Stern. *Helvetica Chimica Acta*, vol. 10, part 6, pp. 859–866 (in German).

Dehydrogenation with sulphur, and dehydrogenation degradation with manganese dioxide and sulphuric acid. L. Ruzicka and E. A. Rudolph. *Helvetica Chimica Acta*, vol. 10, part 6, pp. 915–920 (in German).

Contribution to the study of trimethylene compounds. P. Bruylants. *Bull. Soc. Chimique Belgique*, November, pp. 519–532 (in French).

The direct introduction of substituents in aromatic mercaptans. T. van Hove. *Bull. Soc. Chimique Belgique*, November, pp. 548–549 (in French).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

280,291. Hollow Bodies from Quartz and Similar Material, Process and Apparatus for Making. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, August 12, 1926.

The process is more particularly for the production of hollow bodies closed at one end, from quartz. The material is fused by means of an electric resistor which is hollow and has its terminals at one end, one terminal being connected to the body of the resistor and the other terminal to an internal stem leading to the other end of the resistor. The hollow resistor is closed at one end and may be made of resistance material in the form of a spiral.

280,373. Aromatic Acid Anhydrides, Manufacture of. British Dyestuffs Corporation, Ltd., Hexagon House, Blackley, Manchester, J. B. Payman, and N. Hall, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, November 29, 1926.

It is known that benzo-trichloride reacts with water, particularly in the presence of zinc chloride, to produce benzoyl chloride or benzoic acid and hydrochloric acid according to the equations :—

$$C_6H_5CCl_3 + H_2O = C_6H_5COCl + 2HCl$$
$$C_6H_5CCl_3 + 2H_2O = C_6H_5COOH + 3HCl$$

It is now found that if the benzo-trichloride and water are employed in the molecular proportions of 2:3, benzoic anhydride is obtained according to the equation :—

$$2C_6H_5CCl_3 + 3H_2O = (C_6H_5CO)_2O + 6HCl$$

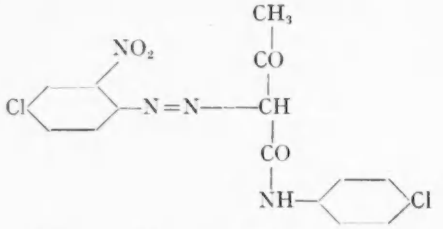
A high temperature is necessary if no catalyst is used, but high yields of benzoic anhydride are obtained at moderate temperatures in the presence of chlorides, sulphates, oxides, benzoates, organic sulphonates, and other organic or inorganic salts of zinc, copper, aluminium, or tin, and heavy or polyvalent metals generally. Some or all of the water may be replaced by benzoic acid. The process gives a yield of about 96 per cent. In an example, benzo-trichloride is treated with water in the presence of powdered pumice impregnated with zinc chloride solution. The mixture is filtered, and the benzoyl chloride and benzoic acid formed as by-products are distilled off. Other examples are given of the use of dry ferrous chloride and crystallised ferrous sulphate as catalysts. In the latter case, the water of crystallisation provides the water for the reaction.

280,435. White Pigment, Manufacture of. B. Laporte, Ltd., Luton, H. E. Alcock, The Knoll, Luton, and I. E. Weber, St. Kilda, Cumberland Road, Leagrave, Beds. Application date, April 27, 1927.

Barium sulphate is known as an extender for titanium pigments, and it has been found that improved properties can be obtained by calcination of mixtures of barium sulphate and titanium oxide, the barium sulphate being in the form of a very pure blanc fixe obtained as described in Specification No. 252,768 (see The Chemical Age, Vol. XV, p. 33). A paste of precipitated titanium hydrate with water is mixed with a paste of blanc fixe and preferably also with a carbonaceous material such as charcoal, starch, flour, sugar, sawdust, cellulose, oil, etc., in the proportion of about 5 per cent. The mixture is heated in a furnace to about 700-950° C. until the carbon is completely burnt, and is then cooled and ground, yielding a uniform white pigment of great covering power. The proportions of barium sulphate and barium oxide are about 7:3.

280,436. Greenish Yellow Azo-dyestuff, Manufacture of. O. Y. Imray, London, from I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, May 5, 1927.

4-chloro-2-nitraniline is diazotised and the diazo solution run into an aqueous suspension of aceto-acetic-parachloranilide and sodium acetate. The azo dyestuff thus obtained is filtered and dried. It is a greenish-yellow powder giving a lake of good fastness to light and oil. The dyestuff has the formula :—



280,262. Absorbent Materials, Manufacture of. British Dyestuffs Corporation, Ltd., Hexagon House, Blackley, Manchester, J. Baddiley and E. Chapman, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, July 15, 1926.

The absorbent properties of substances such as cotton wool, blotting paper, kieselguhr, are improved by impregnating the materials with a small proportion of a high molecular sulphonic acid or a salt thereof, *e.g.*, a sulphonic acid of an aromatic, hydroaromatic, aliphatic-aromatic or polynuclear hydrocarbon. A substance which is particularly suitable is the sulphonic acid of naphthalene containing one or more aliphatic side chains and the product obtained by sulphonating petroleum fractions and condensing with alcohols.

280,447. Mixed Fertilisers, Production of. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, August 11, 1926. Addition to 256,972 (see The Chemical Age, Vol. XV, p. 403).

Specification No. 256,972 describes the production of mixed fertilisers by mixing ammonium nitrate with diammonium phosphate with or without a potassium or calcium salt. In this invention, the hot ammonium nitrate solution is mixed with a potassium or calcium salt and solidified by cooling or spraying. The solid substance is mixed with solid diammonium phosphate. A hot concentrated solution of diammonium phosphate may be used instead of the solid salt. The mixed fertiliser contains nitrogen, P_2O_5, and K_2O, in the ratio of 1:0·7—2:1—5.

Note.—Abstracts of the following specifications, which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—256,638 (C. Still), relating to manufacture of sulphur, see Vol. XV, p. 377 ; 256,972 (I. G. Farbenindustrie Akt.-Ges.), relating to production of mixed fertiliser, see Vol. XV, p. 403) ; 259,608 (I.G. Farbenindustrie Akt.-Ges.), relating to derivatives of benzanthrone containing sulphur, see Vol. XV, p. 595 ; 260,969 (I.G. Farbenindustrie Akt.-Ges.), relating to production of carbon disulphide from its elements, see Vol. XVI, p. 69 ; 263,780 (W. Möller and W. Kreth), relating to readily soluble salts of hydro-fluosilicic acid, see Vol. XVI, p. 239.

International Specifications not yet Accepted

278,761. Chlorine Derivatives. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, October 11, 1926.

1-nitro-2:4-dimethyl-benzene is chlorinated and reduced, the first products being 3-chloro- and 5-chloro-1-amino-2:4-dimethyl-benzene. Further chlorination yields 3 : 5-dichloro-1-amino-2 : 4-dimethyl-benzene. The starting substance may be dissolved in carbon tetrachloride, and sublimed ferric chloride added and chlorine passed through. When the carbon tetrachloride is distilled off, a crystalline and an oily portion remain, yielding the 3-chloro- and 5-chloro compounds respectively on reduction.

279,055. DESTRUCTIVE HYDROGENATION. A. L. H. Spilker, 71, Varzinerstrasse, Meiderich, Duisburg. C. Zerbe, 49, Varzinerstrasse, Meiderich, Duisburg, and Ges. für Teerverwertung, Meiderich, Duisberg, Germany. International Convention date, October 18, 1926. Addition to 277,974.

Specification 277,974 (see THE CHEMICAL AGE, Vol. XVII, p. 496) describes the hydrogenation of hydrocarbons, coal, and its distillates, employing iodine or an iodine compound. In this invention, stable iodine compounds such as alkali and alkaline earth iodides are employed. together with salts which will cause dissociation of the iodine compounds, such as iron alum, ferric chloride and copper sulphate.

Tetrahydronaphthalene and benzene hydrocarbons are obtained from naphthalene, and ammonia and liquid hydrocarbons from coal tar pitch.

279,070. ACETIC ANHYDRIDE. Consortium für Elektrochemische Industrie Ges., 20, Zielstattstrasse, Munich, Germany. International Convention date, October 18, 1926.

Acetic acid vapour is passed through a carbon tube heated to 650° C. and a catalyst consisting of a solution of phosphoric acid in acetic acid is added at the rate of 0·5 gm. of phosphoric acid per kilo of acetic acid vapour. Alternatively, phosphorus or phosphoric acid may be dissolved in this proportion in the total quantity of acetic acid, or hydrochloric acid, boric acid, methyl or ethyl phosphates may be employed as catalysts. The reaction chamber may be of chromium steel, copper, silicon, carborundum, or quartz. The process can be combined with that of specification 272,951 (see THE CHEMICAL AGE, Vol. XVII, p. 200) or with those of specifications 194,719 and 230,063 (see THE CHEMICAL AGE, Vol. VIII, p. 576 and Vol. XII, p. 485). The acetic acid vapour is superheated to 600° C. and passed through a carbon tube into a molten mass of equimolecular proportions of sodium and lithium phosphates in a graphite crucible at 700° C. A solution of phosphoric acid in acetic acid is sprayed into the carbon tube. In all cases acetic anhydride is obtained.

279,072. HYDROGEN. DESTRUCTIVE DISTILLATION. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, October 14, 1926. Addition to 254,713. (See THE CHEMICAL AGE, Vol. XV, p. 279.)

Gases containing hydrocarbons are decomposed with carbon dioxide with or without steam or other gases not rich in oxygen to obtain hydrogen for hydrogenating coal, etc. The gases obtained by the hydrogenation of coal may be freed from higher hydrocarbons, and then treated as above to obtain hydrogen. The process can be carried out in a shaft furnace with a catalytic refractory lining and filling, heated by gas, oil, or coal dust. Alternatively, the furnace may be filled with coke and worked as a producer, the gas being introduced at the cold blowing stage. In an example, gas obtained by hydrogenating coal, tar, or mineral oil, and containing 30–40 per cent. methane, is mixed with carbon dioxide to obtain a mixture of carbon dioxide 23·6 per cent., hydrogen 52 per cent., methane 22·5 per cent., nitrogen 1·3 per cent., and carbon monoxide 0·6 per cent.

The mixture is passed through a shaft furnace heated to 1,100° C., having a refractory filling containing a nickel catalyst, and the products contain carbon monoxide 31·4 per cent., hydrogen 66·2 per cent., carbon dioxide 1·1 per cent., and nitrogen 1·3 per cent. The gas is treated with steam at 500° C. to convert the carbon monoxide into dioxide, which may then be removed.

279,095. HYDROCARBONS. M. G. Corson, 8108, Polk Avenue, Jackson Heights, New York. International Convention date, October 14, 1926.

Calcium carbide is treated with ethyl alcohol, phenol, or chlorine derivative of a hydrocarbon in the absence of carboxyl groups, at 150°—300° C. and 12—40 atmospheres pressure. Di-ethyl-acetylene is formed, and is then treated with hydrogen and a catalyst to obtain hexane. Similarly, monochlorbenzene may be treated to obtain diphenyl-acetylene which, when treated with hydrogen and a catalyst, yields dibenzyl. The latter may be reduced with zinc, magnesium, sodium, or aluminium, and hydrochloric acid to obtain toluene. Other alcohols, phenol, cresol, etc., may be treated similarly.

LATEST NOTIFICATIONS.

281,610. Process for the production of high per cent. calcium cyanamide or magnesium cyanamide or mixtures thereof. Caro, Dr. N., and Frank, Dr. A. R. December 2, 1926.

281,611. Process for the production of the cyanamides of the alkaline earth metals and of magnesium. Caro, Dr. N., and Frank, Dr. A. R. December 2, 1926.

281,642. Process and apparatus for the concentration of dilute nitric acid. Norsk Hydro-Elektrisk Kvælstofaktieselskab. December 6, 1926.

281,645. Apparatus for delivering measured quantities of powdered or granular substances. I.G. Farbenindustrie Akt.-Ges. December 1, 1926.

281,650. Process for preparing 2-chloro-pyridine. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler. December 3, 1926.

281,662. Process for the manufacture of ethylalcohol-gels. Ohle, Dr. H., and Othmar-Neuscheller, J. November 30, 1926.

281,689. Manufacture of acid-proof cementing-compositions. I.G. Farbenindustrie Akt.-Ges. December 1, 1926.

281,690. Manufacture of arsenobenziminazolones. I.G. Farbenindustrie Akt.-Ges. December 2, 1926.

281,691. Concentration of nitric acid. Frischer, H. December 6, 1926.

281,703. Manufacture of benziminazolone-arsinic acids. I.G. Farbenindustrie Akt.-Ges. December 2, 1926.

281,713. Manufacture of dyestuffs. Soc. of Chemical Industry in Basle. December 4, 1926.

Specifications Accepted with Date of Application

266,379. Electro depositing chromium, Process and apparatus for. L. Mellersh-Jackson. (*Siemens and Halske Akt.-Ges.*) February 19, 1927.

269,179. Metals from oxide ores, Methods of producing. E. G. T. Gustafsson. April 10, 1926.

271,044. Concentrating volatile aliphatic acids, Process for. Holzverkohlungs-Industrie Akt.-Ges. May 17, 1926.

271,828. Concentrating raw pyroligneous acid, Process for. Holzverkohlungs-Industrie Akt.-Ges. May 25, 1926. Addition to 271,044.

271,881. Volatile inorganic acids, Methods of producing. M. Frischer. May 27, 1926.

273,659. Electrolytic deposition of chromium. General Motors Corporation. June 30, 1926.

274,882. Electrolytic separation of metallic chromium for the preparation of chromium coatings on other metals, Process for. R. Appel. July 21, 1926.

275,213. Iodine substituted benzonitriles with a linkage of the phenol ether type, Process for the manufacture of. Chemische Fabrik auf Actien (vorm. E. Schering). August 2, 1926.

277,295. Chromium plating. Metals Protection Corporation. September 9, 1926.

281,016. Dyestuffs from benzanthrone, Production of. British Alizarine Co., Ltd., W. H. Dawson, and P. Beghin. August 26, 1926.

281,035. Soda from its solutions, Recovery of. W. M. Wallace and J. M. Gregor. September 13, 1926.

281,051. Alloys, Manufacture of. H. Wade. (*International Nickel Co.*) October 4, 1926.

281,105. Gas, Manufacture of. H. Nielson and B. Laing. August 25, 1926. Addition to 262,834.

281,114. Dyestuffs, Manufacture of, and dyeing cellulose esters. C. M. Barnard and British Alizarine Co., Ltd. January 6, 1927.

281,129. Zinc, Manufacture of. H. E. Coley. February 2, 1927.

281,133. Purifying sulphur containing bitumen, Process of. W. Blythe and Co., Ltd., W. H. Bentley, and B. Catlow. February 12, 1927.

281,134. Calcium formaldehyde sulphoxylate, Process for the production of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*) February 14, 1927.

265,606. Electrodes for electrolytic cells. R. Pechkranz. February 5, 1926.

280,972. Acetic anhydride, Manufacture of. H. Dreyfus. May 26, 1926.

280,973. Dispersion of solids in liquids, Apparatus for. W. H. Whatmough. May 29, 1926.

280,976. Reduction of iron ores. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*) June 19, 1926. Addition to 8,518/26.

Applications for Patents

Burt, Boulton, and Haywood, Ltd., and China, F. J. E. Device for spraying emulsions of bitumen, etc. 33,356. December 9.

Caro, N. Production of hydrocyanic acid. 32,837. December 5. (Germany, December 17, 1926.)

Carpmael, A. (I.G. Farbenindustrie Akt.-Ges.). Manufacture of sulphonic acids, etc. 33,131. December 7.

Carpmael, A. (I.G. Farbenindustrie Akt.-Ges.). Manufacture of derivatives of hydroxy-compounds containing mercury. 33,205. December 8.

Cranston, W. M. Carbonisation of coal. 32,801. December 5.
Fabriques de Produits de Chimie Organique de Laire. Manufacture of primary amines. 33,355. December 9. (France, December 9, 1926.)
Flesch, H. Production of sulphonated oils and fats. 33,338. December 9. (Germany, January 27.)
Frank, A. R. Production of hydrocyanic acid. 32,837. December 5. (Germany, December 17, 1926.)
Galbraith, W. T., and Mills, A. E. Preparation of synthetically-produced rubber. 32,761. December 5.
Harrison, H. A., and Morgan, G. T. Manufacture of acenaphthene derivatives. 33,199. December 8.
Hayhurst, W. Pumping acid for acid towers, etc. 33,490. December 10.
Hurrell, G. C. Production of emulsions, etc. 32,950. December 6.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Recovery of phosphoric acid from crude phosphates. 32,706. December 5.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of liquid hydrocarbons. 32,797. December 5.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of rubber. 32,798. December 5.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of vat dyestuffs. 32,799. December 5.
I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Process of dyeing animal fibres. 32,804. December 5.
I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Production of fast dyeings, etc. 32,982. December 6.
I.G. Farbenindustrie Akt.-Ges. Manufacture of sulphonic acids, etc. 33,131. December 7.
I.G. Farbenindustrie Akt.-Ges. Manufacture of derivatives of hydroxy-compounds containing mercury. 33,205. December 8.
I.G. Farbenindustrie Akt.-Ges. Manufacture of anthracene dyestuffs. 33,340. December 9.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of salts of acid sulphuric esters of nitro-oxyanthranoles. 33,341. December 9.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Improving absorption capacity of materials. 33,468. December 10.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Dyes. 33,469. December 10.
I.G. Farbenindustrie Akt.-Ges. Manufacture of gland preparations, etc. 33,114. December 7. (Germany, January 11.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of liquid products from coal, etc. 33,339. December 9. (Germany, December 20, 1926.)
Imperial Chemical Industries, Ltd. Manufacture of moulded articles. 33,348. December 9.
Imray, O. Y. (Soc. of Chemical Industry in Basle). Manufacture of unilaterally acylated diamines. 32,981. December 6.
Kernot, J. C. Refining and bleaching fish oils. 33,412. December 10.
Lehmann, F. B., and Lehmann, J. M. [Firm of]. Filter presses. 32,766. December 5. (Germany, September 19.)
Major, J. L. Production of lamp black. 33,015. December 6.
Pope, P. C. Low-temperature carbonisation apparatus. 33,336. December 9.
Timmis, G. M., and Wellcome Foundation, Ltd. Preparation of soluble salts of ergotoxine. 33,095. December 7. (December 23, 1926.)

The I.G. to Increase its Capital by £12,500,000

A MEETING of the board of the I. G. Farbenindustrie was held on Saturday, December 10, when it was stated that the present state of business was excellent, and that an increase of capital for purposes of construction and expansion, chiefly in the nitrogen and oil production departments, is projected.

At the general meeting next January a motion will be brought forward for the issue of 250,000,000 marks' worth of bonds. These bonds are to be convertible, will be issued at par, and will be available to ordinary shareholders in the proportion of four to one. The nominal fixed interest would be about 6 per cent. It was stated that for the year 1927 a dividend of 12 per cent. might be expected. While the anticipated progress had been made in respect of coal distillation, a solution of the problems involved in placing synthetic rubber on the market had not been arrived at. Considerable advancement had, however, been made in this direction recently. No announcements of a detailed nature were made with regard to the state of international negotiations, but it was stated that an arrangement with the French chemical industry was on the point of being concluded. The negotiations with representatives of the British chemical industry had, however, as yet achieved no tangible result.

X-Rays in the Paint Industry

Dr. Shearer's Address to the Oil and Colour Chemists

AT a meeting of the Oil and Colour Chemists' Association, held in the rooms of the National Federation of Associated Paint, Colour and Varnish Manufacturers, London, on Thursday, December 8, Dr. G. Shearer, of the National Physical Laboratory, read a paper on the application of X-rays to industry. In order to understand the properties of any material, he said, it was essential that we should get to know the details of its structure. The finer the detail we could examine, the more fundamental the knowledge we were likely to derive from the examination.

A few of the problems to which X-ray examination had been applied in pure chemistry were discussed, and reference was then made to the applied field. Here, said Dr. Shearer, the problems were very varied. Inasmuch as each particular substance had its own particular pattern, we had an immediate means of recognising the presence of any particular substance in a material. Another field which had recently been developed very rapidly concerned itself not so much with the detailed structure of the crystals as with the way in which they were oriented. A powder or substance in which the crystals were oriented entirely at random gave a circular pattern. If some process had been at work which tended to produce orientation in some particular direction, the circles would break up and show only as small arcs. The smaller the arc the more selective the orientation. A substance with all its small crystals oriented in all sorts of ways would have the same properties in different directions; if, however, there were a tendency for the small crystals to arrange themselves in some definite way this would no longer be the case. In metallurgy such effects were of extreme importance, and it was in this field that the greatest part of the work had been done, though it was by no means confined to this field. Practically all natural fibres showed this effect. Usually a fibre was a collection of small crystals with one definite direction of the crystals set along the length of the fibre, so that if we took an X-ray photograph of such a collection the circles would be broken up into arcs.

The Examination of Gums

Examples of patterns of substances used in the paint and varnish industries were then shown. Two specimens of Congo gum were shown, the first untreated, and the second heat-treated. In each case there was an amorphous band, but in the case of the untreated gum there were definite crystal lines, which disappeared on heat treatment. Examples of paints were shown, in order to illustrate how very different the patterns were according to the pigment used. Finally, Dr. Shearer said that we should be able to go further than the stage at present reached when we became more skilled in the interpretation of the information yielded by X-ray examination, and more skilled in technique.

Discussion

The president (Mr. C. A. Klein) said he felt every chemist would be grateful for the knowledge that at last the poor old solid state was receiving a little attention. He knew of no industry which required methods of examining the solid more than the paint and colour industry.

Dr. L. A. Jordan (Director of the Research Association of the Paint and Varnish Manufacturers) said that the Association had been thinking about X-ray examination for quite a long time. It was an open secret that the attitude of the Association on this matter was such that if, as the result of a preliminary survey of the different aspects of the work they wished to investigate, there was any positive evidence that profitable results would ensue, the next move was to establish the necessary instruments at the laboratory, and he looked forward to the time when the intelligentsia of the paint and varnish industry would regard Teddington as their spiritual home at last.

THE *London Gazette* of December 9 announced that the King had awarded the Edward medal to William Lloyd and Frank Boot employed by Quibell Brothers, Ltd., Nottingham, for displaying a high degree of courage in rescuing a colleague who was overcome by benzine fumes while employed on a degreasing plant.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.

BLEACHING POWDER.—Spot; £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7¼d. to 7¾d. per lb. Crude 60's, 2s. 5d. per gall. prompt; lower for 1928 delivery.

ACID CRESYLIC 99/100.—2s. 11d. to 3s. per gall. 97/99.— 2s. 4d. to 2s. 8½d. per gall. Pale, 95%, 2s. 3d. to 2s. 6d. per gall. Dark, 95%, 2s. 1d. to 2s. 3d.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7¾d. to 8d. per gall.

BENZOLE.—Crude 65's, 9¼d. to 9¾d. per gall., ex works in tank wagons. Standard Motor, 1s. 1½d. to 1s. 2½d. per gall., ex works in tank wagons. Pure, 1s. 5d. to 1s. 6d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 2s. per gall.

XYLOL.—1s. 3d. to 1s. 10d. per gall. Pure, 1s. 9d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8⅞d. to 9d. per gall. Standard specification, 7¾d. to 7⅞d. ex works. Salty, 7d. per gall., less 1¼%.

NAPHTHA.—Crude, 9d. to 10d. per gall. Solvent 90/160, 9½d. to 10d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9½d. to 1s. 3d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.

NAPHTHALENE.—Crystals, £13 to £13 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 85s. to 90s. per ton, f.o.b., according to district. Market firm.

PYRIDINE.—90/140, 5s. 6d. to 6s. 6d. per gall. 90/180, 3s. 6d. to 5s. per gall. Heavy, 3s. to 3s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 5d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 5d. per lb.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8½d. per lb.

p-TOLUIDINE.—2s. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE. YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3d. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 3¼d. to 2s. 5d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.
ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 6¾d. to 1s. 7d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
ACID, SALICYLIC, B.P. PULV.—1s. 2½d. to 1s. 4½d. per lb.; Technical.—11½d. to 11¾d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 3¼d. per lb., less 5%.
ACETANILIDE.—1s. 6d. to 1s. 9d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—8s. to 8s. 3d. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—10s. 4d. to 10s. 7d. per lb.
BISMUTH CITRATE.—9s. 10d. to 10s. 1d. per lb.
BISMUTH SALICYLATE.—8s. 10d. to 10s. 1d. per lb.
BISMUTH SUBNITRATE.—8s. 4d. to 8s. 7d. per lb.
BISMUTH NITRATE.—6s. 1d. to 6s. 4d. per lb.
BISMUTH OXIDE.—13s. 10d. to 14s. 1d. per lb.
BISMUTH SUBCHLORIDE.—13s. 10d. to 14s. 1d. per lb.
BISMUTH SUBGALLATE.—8s. 1d. to 8s. 4d. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi et Ammon, Cit. B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts., 11½d. per lb.
BORAX B.P.—Crystal, 25s. per cwt.; powder, 26s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 1s. 11½d. to 2s. 3d. per lb.; potassium, 1s. 8¾d. to 1s. 11¾d. per lb.; sodium, 1s. 10½d. to 2s. 2d. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.
CALCIUM LACTATE.—1s. 2d. to 1s. 3½d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—1s. 1½d. to 10½d., drums; other gravities at proportionate prices.
FORMALDEHYDE.—£39 per ton, in barrels ex wharf.
GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 3s. per gall.; 20 vols., 3s. to 4s. per gall.
HYDROQUINONE.—3s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE.—B.P., 2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb.; U.S.P., 2s. 2d. to 2s. 5d. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
MENTHOL.—A.B.R. recrystallised B.P., 15s. 6d. per lb. net for January delivery; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 11s. 3d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10s. to 5s. 11d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 5d. to 1s. 9d. per lb.
METHYL SULPHONAL.—9s. to 9s. 3d. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb. Less in quantity.
PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
PHENAZONE.—4s. to 4s. 3d. per lb.
PHENOLPHTHALEIN.—6s. 6d. to 6s. 9d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—96s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 1911, 1s. 8d. to 1s. 11d. per lb.; U.S.P., 1s. 11d. to 2s. 2d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—55s. per lb.; in quantity lower.
SALOL.—2s. 4d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—1s. 11d. to 2s. 1d. per lb. for 1-cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 9d. per lb. Crystal, 1s. 8d. to 1s. 10d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—6s. 9d. to 7s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 1d. per lb.
THYMOL.—Puriss., 10s. to 10s. 3d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—11s. per lb.
AMYL ACETATE.—2s. per lb.
AMYL BUTYRATE.—5s. 3d. per lb.
AMYL SALICYLATE.—3s. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—16s. 6d. per lb.
COUMARIN.—10s. per lb.
CITRONELLOL.—13s. 3d. per lb.
CITRAL.—8s. 3d. per lb.
ETHYL CINNAMATE.—6s. per lb.
ETHYL PETHALATE.—3s. per lb.
EUGENOL.—8s. 3d. per lb.
GERANIOL (PALMAROSA).—17s. 9d. per lb.
GERANIOL.—6s. to 10s. per lb.
HELIOTROPINE.—4s. 9d. per lb.
ISO EUGENOL.—13s. per lb.
LINALOOL.—Ex Bois de Rose, 14s. per lb. Ex Shui Oil, 9s. 9d. per lb.
LINALYL ACETATE.—Ex Bois de Rose, 17s. 6d. per lb. Ex Shui Oil, 13s. 9d. per lb.
METHYL ANTHRANILATE.—8s. 6d. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—8s. per lb.
NEROLIN.—4s. 6d. per lb.
PHENYL ETHYL ACETATE.—12s. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—31s. 6d. per lb.
SAFROL.—1s. 6d. per lb.
TERPINEOL.—1s. 8d. per lb.
VANILLIN.—15s. 3d. to 16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 11s. per lb.
ANISE OIL.—2s. 9d. per lb.
BERGAMOT OIL.—26s. per lb.
BOURBON GERANIUM OIL.—13s. per lb.
CAMPHOR OIL.—9d. per lb.
CANANGA OIL, JAVA.—15s. 9d. per lb.
CINNAMON OIL LEAF.—6d. per oz.
CASSIA OIL, 80/85%.—7s. 3d. per lb.
CITRONELLA OIL.—Java, 1s. 9d. per lb., c.i.f. U.K. port for shipment over 1928. Ceylon, pure, 1s. 7d. per lb.
CLOVE OIL.—5s. per lb.
EUCALYPTUS OIL, AUSTRALIAN.—2s. 1d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 17s. per lb.
LEMON OIL.—8s. 6d. per lb.
LEMONGRASS OIL.—4s. 6d. per lb.
ORANGE OIL, SWEET.—11s. 3d. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
PALMA ROSA OIL.—10s. 3d. per lb.
PEPPERMINT OIL.—Wayne County, 15s. 9d. per lb.; Japanese, 8s. per lb.
PETITGRAIN OIL.—7s. 9d. per lb.
SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, December 15, 1927.

THERE has been a good volume of business during the past week and prices, on the whole, remain steady. Export market has been active.

General Chemicals

ACETONE.—Unchanged at £63 per ton, with reduction for larger quantities.

ACID ACETIC is still very firm. Price unchanged at £37 to £38 per ton for 80%.

ACID CITRIC.—Unchanged.

ACID FORMIC is still in good demand. Price still firm at about £45 per ton.

ACID LACTIC.—Unchanged.

ACID OXALIC is still firm and in good demand at £30 per ton.

ALUMINA SULPHATE.—Demand remains active and price firm at £5 15s. per ton.

AMMONIUM CHLORIDE.—Unchanged.

BARIUM CHLORIDE.—Unchanged at £8 10s. to £9 per ton.

COPPER SULPHATE.—Unchanged.

FORMALDEHYDE is in fair demand, price remains unchanged, at about £41 per ton.

LEAD ACETATE.—Demand is increasing at £43 10s. for white with 10s. per ton less for brown.

LIME ACETATE.—Unchanged.

METHYL ACETONE.—The market is quiet at £54 to £55 per ton.

POTASSIUM CHLORATE is still firm and in short supply.

POTASSIUM PERMANGANATE.—Price is 5d. to 5½d. per lb.

POTASSIUM PRUSSIATE.—Unchanged at £59 per ton.

SODA ACETATE still very short, price remains firm at £19 15s. per ton to £20 per ton.

SODA BICHROMATE.—Unchanged at 3¼d. per lb.

SODA CHLORATE.—Continues very firm and in short supply at £26 to £28 per ton.

SODA NITRATE.—Unchanged at £19 10s. to £20 per ton. Position firm and demand good.

SODA PRUSSIATE.—Firm at 4½d. per lb. to 5d. per lb., according to quantities.

SODA SULPHIDE.—Unchanged.

ZINC SULPHATE.—Unchanged.

Coal Tar Products

The market for coal tar products remains quiet, with little change to report in the values.

90's BENZOL is unchanged at about 1s. 4d. to 1s. 5d. per gallon, on rails, while the motor quality is quoted at 1s. 1½d. to 1s. 2½d. per gallon.

PURE BENZOL is worth about 1s. 6½d. to 1s. 7d. per gallon, on rails.

CREOSOTE OIL is firm, and is quoted at about 7½d. per gallon, on rails, in the North, while the price in London is about 8½d. per gallon.

CRESYLIC ACID is unchanged, at about 2s. 2d. per gallon, ex works, for the pale quality, 97/99%, while the dark quality, 95/97%, is worth about 1s. 11d. per gallon.

SOLVENT NAPHTHA is very weak, and is quoted at about 9d. per gallon, on rails.

HEAVY NAPHTHA is worth about 11d. per gallon, on rails.

NAPHTHALENES remain steady, at about £6 15s. to £7 per ton, for the 74/76 quality, and at about £8 to £8 15s. per ton for the 76/78 quality.

PITCH is in rather better demand for prompt and forward shipment and to-day's value is 85s. to 90s. per ton, f.o.b. U.K. ports.

Latest Oil Prices

LONDON—December 14.—LINSEED OIL, firm and 5s. to 7s. 6d. per ton higher. Spot, ex mill, £29 10s.; December, £28 7s. 6d.; January-April, £28 12s. 6d.; May-August, £29 7s. 6d. RAPE OIL, quiet. Crude extracted, £44; technical refined, £46, naked, ex wharf. COTTON OIL, firm. Refined common edible, £42; Egyptian crude, £37 15s.; deodorised, £44. TURPENTINE, steady. American spot, 37s. 9d.; January-April, 38s. 9d. per cwt.

HULL—December 14.—LINSEED OIL.—Spot and December, £29; January-April, £29 2s. 6d.; May-August, £29 7s. 6d. per ton, naked. COTTON OIL.—Bombay crude, £32; Egyptian crude (new), £36 15s.; edible refined, £40; technical, £36 5s.; deodorised, £42 per ton, naked. PALM KERNEL OIL.—Crushed 5½ per cent., £39 10s. per ton, naked. GROUNDNUT OIL.—Crushed extracted, £46 10s.; deodorised, £50 10s. per ton. SOYA OIL.—Extracted and crushed, £35; deodorised, £38 10s. per ton. RAPE OIL.—Crude-extracted, £43; refined, £45 per ton. TURPENTINE.—Spot, 39s.9d. per cwt., net cash terms, ex mill. CASTOR and COD OIL unaltered.

Nitrogen Products

Export.—Inquiries for sulphate of ammonia have not been so numerous for the last week, but the price remains firm at £9 11s./£9 15s. per ton, f.o.b., in single bags. It is understood that continental producers continue to make large sales, and despite the enormous increase in production, stocks at makers' works will remain low.

Home.—The feature of the home market has been the placing of orders for substantial quantities for shipment to Ireland. It is expected that there will be a large increase in consumption in this country. Apart from this the home market continues quiet.

Nitrate of Soda.—Sales of this commodity have been very small, but the price has not receded any further for early shipment. On account of the large increase in production, prices ranging from 16s. to 17s. per ton have been quoted for summer shipment. The position with regard to the stocks in America is uncertain, so it is quite impossible to forecast the trend of the market.

South Wales By-Products

There is no change to report in South Wales by-product activities Business is quiet, and the demand for most products has fallen off This, of course, is usual at this time of the year, and brisker buying cannot be looked for until about the first or second week of the New Year. Pitch has only a small demand, but the prices are unchanged at from 77s. 6d. to 82s. 6d. per ton. There is a moderate inquiry for solvent naphtha, which continues to sell from 10d. to 1s. 0½d. per gallon, f.o.r. maker's works. Tars are exceptionally quiet, and are unlikely to be in any demand for some weeks to come. Crude tar ranges from 60s. to 65s. per ton. Refined tars are unchanged, coke oven tar selling at 8½d. to 9d. per gallon, and gasworks tar at 7d. to 7¾d. per gallon, f.o.r. maker's works, and 10d. to 1s. delivered in barrels. Crude naphthalene has a small demand at from £4 10s. to £5 per ton. Patent fuel continues to be quiet, but both the export and home prospects are brighter, and a good demand is anticipated with the opening of the New Year. Prices are unchanged. Coke has very little demand, but there has been a slight increase in home sales and prices are unchanged.

Fertilisers in France

THE production of fertilisers in France has increased considerably since the war. The output of nitrates, phosphates and potassium products during the last two years has been as follows: Sodium nitrate imports totalled 328,228 metric tons in 1925, but—owing not only to the rise of the franc, but also to the increased consumption of ammonium sulphate—fell to 174,718 tons in 1926. French production of ammonium sulphate, which in 1913 had amounted to 75,000 metric tons, reached 117,000 tons in 1925 and 155,000 in 1926, while imports rose from 121,059 metric tons in 1924 to 126,687 in 1925 and reached 204,112 in 1926. There are now in France four factories producing synthetic ammonia, the present monthly output of which amounts to 410 metric tons, but is expected later to reach 1,320 metric tons a month; nine more factories are being built and are scheduled to begin work during 1927, the total output of which is estimated at 7,320 tons per month. Most of France's imports of natural phosphates come from North Africa; in 1925, 1,282,000 metric tons out of a total of 1,293,000, and in 1926, 1,492,000 metric tons out of 1,502,000 were obtained from this source. France's production of superphosphates in 1925 is estimated at 2,380,542 metric tons, as against 2,303,000 in 1924; no figures are available for 1926. Imports of superphosphates into France during 1926 totalled 11,765 metric tons and French exports amounted to 281,572 tons. France's production of pure potash (K_2O) in 1925 amounted to 366,664 metric tons, as against 310,061 in 1925 and 271,614 in 1924; its use is increasing rapidly.

PAPERS ON "Some Features of Sulphur for Rubber Manufacture," by Dr. D. F. Twiss, of the Dunlop Rubber Co., and "Naphthas and Their Uses," by Mr. Cecil Chapman, were read on Wednesday, December 7, at a joint meeting of the Institution of the Rubber Industry and the Society of Chemical Industry, Glasgow Section.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, December 14, 1927.

DURING the past week, business in the heavy chemical market has continued to be fairly active, most of the inquiry, however, being for contract business over next year. Prices for spot delivery remain on about the same level as last reported.

Industrial Chemicals

ACETONE, B.G.S.—Quoted £59 to £62 per ton, ex store, according to quantity.

ACID ACETIC.—98/100%, glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID, BORIC.—Crystals, granulated or small flakes, £30 per ton; powdered, £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In little demand and price slightly easier at 7¼d. per lb., f.o.b. U.K. ports.

ACID, CITRIC, B.P. CRYSTALS.—Quoted 1s. 6¾d. per lb., less 5% ex wharf.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80°.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3¼d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more. . .

ACID TARTARIC, B.P. CRYSTALS.—Still in little demand, but price unchanged at 1s. 2½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM.—Lump Potash quality quoted £8 5s. per ton, c.i.f. U.K. ports; crystal meal, 10s. per ton less; lump quality on spot offered at £9 per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5-cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer at £19 15s. per ton, c.i.f. U.K. ports; fine white crystals quoted £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Rather easier and now offered at £19 17s. 6d. per ton, ex wharf, prompt despatch from mines. Spot material on offer at £20 15s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex station. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers, £8 per ton, ex station, minimum 4-ton lots. Spot material, 10s. per ton extra. Continental now offered at about £7 per ton, ex wharf. A reduction in price of British material of about £1 per ton, is anticipated for next year.

BORAX.—English manufacturers' prices unchanged as follow:—granulated, £19 10s. per ton; crystals, £20 per ton; powdered, £21 per ton. Odd parcels of granulated on offer from America at about £16 per ton, ex wharf.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 to £5 5s. per ton, ex station, with a slight reduction for contracts. Continental now on offer at £3 10s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material quoted £23 per ton, c.i.f. U.K. ports. British on offer at £24 per ton, ex store.

FORMALDEHYDE, 40%.—On offer at £37 5s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—In good demand and price advanced to about £30 15s. per ton, ex store.

LEAD, WHITE.—Quoted £31 per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown about £38 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC, 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered. Price from January 1st, 4⅜d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Rather scarce for immediate delivery. Quoted £25 10s. per ton, ex wharf. Spot materia about £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100%.—On offer from the Continent at £25 10s. per ton, c.i.f. U.K. ports, for powdered quality. Crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Quoted £20 per ton, c.i.f. U.K. ports. Spot material available at £21 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6⅜d. per lb., ex wharf.

SODA CAUSTIC.—Powdered, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum 4-ton lots on contract. Spot material 10s. per ton extra. A reduction on the basis of £1 per ton, for the high strength is anticipated for next year.

SODIUM ACETATE.—In good demand and still scarce for prompt delivery. Quoted £18 5s. per ton, c.i.f. U.K. ports. British material quoted £22 per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised quality £10 10s. per ton, ex quay or station. N.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Price for delivery this year 3¼d. per lb., delivered buyers' works, from January 1st, 3d. per lb., delivered buyers' works, minimum 2-ton lots. Smaller quantities 1 1/16d. per lb. extra.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 27s. 6d. per ton extra alkali, 58%, £8 10s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 10s. per ton, ex store. Minimum 4-ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment. Pea crystals of British manufacture, quoted £15 5s. per ton, ex station, 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at about 4¼d. per lb., ex store. Offered for prompt shipment from the Continent at 4⅛d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—Manufacturers' advise an appreciable reduction in price for next year. Present prices for English material are as follows:—60/62%, solid, £10 10s. per ton; broken, £11 10s. per ton; flakes, £13 5s. per ton; crystals, 31/34%, £7 10s. per ton to £8 5s. per ton, according to quality, delivered your works, minimum 4-ton lots on contract. Prices for spot delivery 5s. per ton higher for solid, 2s. 6d. per ton for crystals. Offered from the Continent at about £9 5s. per ton, c.i.f. U.K. ports. Broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Iron Oxides in Canada

SHIPMENTS of iron oxides from Canadian deposits during 1926 amounted to 6,626 tons, valued at $101,843, according to finally revised statistics just issued by the Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics at Ottawa. In 1925 the production was 7,118 tons, valued at $91,913. Iron oxides are marketed in Canada in two forms, namely, crude and calcined. Crude oxides are dried before shipment for use in the purification of illuminating gas, while the calcined product is ground, usually for consumption in the paint industry. Capital employed in the iron oxides industry in Canada during 1926 was reported at $178,078.

Manchester Chemical Market

(From Our Own Correspondent).

Manchester, December 15, 1927.

A moderate business in chemical products on the Manchester market has been put through during the past week. With the end of the year in sight the interest of users centres largely just now on forward positions, and there has been a fair amount of activity in contract commitments for 1928 deliveries, especially in bleaching powder, saltcake, the bichromates, and other products in which makers have made important price concessions compared with the values that have been ruling during the past twelve months.

Heavy Chemicals

Demand for sulphide of sodium has been rather slow, and prices are easy at about £9 15s. per ton for 60-65 per cent. concentrated solid and £8 7s. 6d. for commercial quality. For the remainder of this year caustic soda is unchanged at from £14 10s. to £16 10s. per ton, according to quality, business being moderate, with good contract inquiries reported on next year's account. Bicarbonate of soda is in quiet demand at about £10 10s. per ton. There is little new to report in the case of phosphate of soda, a quiet trade being put through at from £12 12s. 6d. to £12 15s. per ton. Hyposulphite of soda is on the slow side, with values ranging from £16 5s. to £16 10s. per ton for the photographic quality and about £9 10s. for the commercial. Values of chlorate of soda are steady at about 2⅞d. per lb. Nitrite of soda is also well held, offers of this material being on the basis of £19 to £19 5s. per ton. Alkali is unchanged up to the end of the year at £6 15s. per ton, and a moderate amount of buying interest is being shown. Current offers of bichromate of soda are at about 3⅛d. per lb., with concessions offered for next year's contracts. A substantial cut has also been indicated by makers for 1928 deliveries of saltcake, forward quotations at £2 12s. 6d. per ton representing a cut of about 15s. on present prices. Glauber salts are still quiet and easy at £3 2s. 6d. to £3 5s. per ton. Prussiate of soda meets with a quiet demand at from 4¼d. to 4⅜d. per lb.

Quotations for the potash compounds are steady generally. Yellow prussiate is fully maintained at from 6½d. to 6¾d. per lb., and a moderate inquiry has been reported for this material. Permanganate of potash is quiet, and values are a trifle uncertain, with B.P. quality in the neighbourhood of 5½d. per lb., and commercial being quoted down to 4⅞d. per lb. A fair demand is being experienced for carbonate of potash and caustic potash at steady prices, these being about £26 10s. and £30 to £31 per ton. There is little change in the position of chlorate of potash since last week, a quiet trade passing at about 2⅞d. per lb. Spot supplies of bichromate of potash are on offer at round 4¼d. per lb.

The demand for arsenic is only on a moderate scale, but values keep up at from £18 to £18 5s. per ton at the mines for white powdered, Cornish makes. A fair amount of interest is being shown in sulphate of copper at from £24 per ton f.o.b. There is no actual change in the prices of the acetates of lime, but the relative scarcity of this material, particularly for prompt, serves to maintain quotations at round £16 10s. per ton for grey and £10 10s. for brown. The acetates of lead are fairly steady at £41 per ton for white and round £39 10s. for brown, but the demand is slow. Nitrate of lead also is inactive and at about £37 10s. per ton lower prices are being asked.

Acids and Tar Products

There is continued firmness about citric acid, quotations for which are at round 1s. 7d. per lb. Interest in tartaric acid is still on the quiet side, with offers at from 1s. 2⅝d. to 1s. 2¾d. per lb. Oxalic acid is moving off rather slowly, but prices remain steady at 3½d. per lb. There is a moderate demand about for acetic acid, and values are held at £37 per ton for the 80 per cent. commercial and £66 to £67 for the glacial.

Current quotations for pitch on this market range from £4 2s. 6d. to £4 5s. per ton f.o.b., but there is not much stirring. Solvent naphtha is quiet and easy at about 11d. per gallon. Creosote oil continues very firm at 8d. to 8½d. per gallon, and a steady inquiry for shipment is reported. Carbolic acid is featureless, with crystal on offer at 7½d. per lb. and crude at from 2s. 4d. to 2s. 5d. per gallon.

The Tar Pool Case

Court of Appeal Decision

The Court of Appeal, consisting of Lords Justices Scrutton and Atkin and Mr. Justice Eve, on Friday, December 9, heard particulars of litigation between Crow, Catchpole and Co., Ltd., and Burt, Boulton and Haywood, Ltd., arising out of the "Tar Pool." There are two actions and the Court was concerned with interlocutory appeals against the orders of Mr. Justice Swift and Mr. Justice Roche sitting in Chambers and dealing with matters of a technical character which precede the appearance of the cases for trial. Mr. Jowitt (for Crow, Catchpole and Co.) explained that the Tar Pool was an organisation in which a number of big concerns joined for the purpose of assuring that each secured a supply of tar for commercial purposes. They entered into an agreement the nature of which was well known and the allegation was that the defendants were in arrear with their contribution. He understood that they were perfectly willing to admit the arrears which, it was said, were of considerable quantities, but they pleaded that they could not contribute to the pool tar they received under what was called the Prince Regent agreement they had entered into.

The plaintiffs claimed that they were entitled to have the tar and they relied upon a clause of the agreement which covered, they said, a case of this sort. Mr. Justice Roche considered that agreement did not operate. He thought the matter was one for an arbitrator. In November the plaintiffs issued a writ in which they sued Burt, Boulton and Haywood, Ltd., and the action also concerned the South Eastern Tar Distillers, Ltd. The plaintiffs claimed an injunction to restrain the defendants from acquiring or attempting to acquire, any tar from certain sources in contravention of the pool agreement. What had happened was that the defendants had taken a prominent part in forming the South Eastern Tar Distillers, Ltd. The defendants used that company to set up business within the area covered by the pool agreement. Plaintiffs alleged that such an arrangement was contrary to the defendants obligations to their pool. The application for an interim injunction came before Mr. Justice Swift and that was countered by an application by the defendants to stay the action as against Burt, Boulton and Haywood. The judge had made the order. What the plaintiffs would like would be to get the whole case before the Commercial judge in the King's Bench Division and ask for a speedy trial.

Lord Justice Scrutton, in giving judgment, said that in the second action the Court thought it desirable to know more precisely what the action was and other details, and therefore that case would be adjourned for pleadings. There remained the first action in which an arbitration clause applied. It appeared to his lordship that the appellants had not shown sufficient reason why the arbitration clause should not be carried out. Mr. Justice Roche was right in staying the first action. The appeal would be dismissed, with costs. Lord Justice Atkin and Mr. Justice Eve concurred.

Synthetic Resin Expansion

British Cyanides Co., Ltd., has purchased the privately held shares in the Beetle Products Co., and now owns the whole of its issued share capital. Col. Josselyn (one of the British Cyanides directors) becomes chairman of the Beetle Products Co. Mr. S. T. Marman has joined the board of the British Cyanides Co. The British Cyanides profit for October was sufficient to wipe out more than one-half of the loss carried forward from last year, and the second half of the current financial year should open on January 1 with a balance to the credit of profit and loss account. Two new plants for production of Beetle powders will be laid down and the existing small plant will be reserved for producing special coloured powders. Arrangements are being completed for the formation of a moulding company on the Continent which will draw supplies of powder from Oldbury. British Cyanides will hold a half interest. The problem of the most profitable realisation of foreign rights is being considered.

The directors offer to the shareholders at 3s. per share (a premium of 1s.) one new ordinary share for each eight shares held or under option on November 30, 1927. The issue has been underwritten by the Rock Investment Co.

Company News

ANGLO-AMERICAN OIL CO.—An interim dividend of 1s. 6d. per share, is announced, tax free.

SHAWINIGAN WATER AND POWER.—A dividend of $1½ per share has been declared for the quarter ending December 31, payable on January 10.

BOOTS' PURE DRUG CO.—For the quarter an interim dividend of 6 per cent., less income tax, is to be paid on January 2 on the ordinary shares.

COURTAULDS, LTD.—A dividend on the 5 per cent. cumulative preference shares will be paid on January 1, 1928, to shareholders on the books at the close of business on December 8.

SULPHIDE CORPORATION.—The directors have declared a dividend of 7½ per cent. on the preference shares to be paid out of the profit earned during the year ended June 30, 1927, payable on January 9, 1928.

TARMAC.—The board have authorised the payment on January 1 next of a dividend on the 5½ per cent. free of income-tax cumulative preference shares in respect of the half year ended December 31, 1927.

ROOIBERG MINERALS DEVELOPMENT CO.—An interim dividend of 5 per cent. has been declared for the half-year ending December 31, and warrants will be posted about February 8. A year ago an interim dividend of 3¾ per cent. was paid.

ALUMINIUM CORPORATION.—For the year 1926 the accounts show a profit of £36,224, compared with £53,743 for the preceding year. After providing for debenture loan and mortgage interest, there is a deficit of £62,163, which, added to the balance of £13,734 brought forward, gives a debit of £76,347 to be carried forward. No dividend has been yet paid on the ordinary shares.

UNITED INDIGO AND CHEMICAL CO., LTD.—At a meeting of the directors held on November 22, it was decided to pay an interim dividend of 5 per cent. per annum for the six months ending December 31, 1927, on the participating cumulative preference shares, and on the ordinary shares, subject to income tax at 4s. in the £. Both dividends will be payable on December 31, 1927.

DE BEERS.—Presiding at the annual meeting on December 9, Sir David Harris stated that although they were in a position to pay a dividend, in view of the situation the board had decided not to pay an interim dividend on the deferred shares this year. The total profits were £3,157,534. After paying dividends there remained unappropriated a sum of £347,624, which would be carried to the next year's accounts.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CHEMICAL MANURES.—A firm of manufacturers' agents in Cyprus desire to obtain the representation of a British manufacturer. They state they are in a position to secure important business. (Reference No. 489.)

SOAPS, VARNISHES AND PAINTS.—An Indian firm of commission agents established in Karachi are desirous of undertaking the representation of British manufacturers for Sind and the Punjab. (Reference No. 484.)

Nobel-Naylor Conference Dinner

THE annual Nobel-Naylor Conference dinner (representing Nobel Finishes, Ltd., and Naylor Brothers, Ltd.) which was held at the Castle Hotel, Windsor, on Thursday, December 8, was the largest assembly in the series, indicating the steady growth of the business. Mr. Samuel E. George presided, and proposed the toast of the representatives, to which Mr. H. W. Peck replied. The presentation of prizes for the best returns also took place. Mr. A. J. Ging proposed "The Ladies, Guests, and Associated Companies," Mr. J. Laing replying for the guests and Mr. P. W. Marshall for the associated companies. The conferences during the week were of an interesting and educational character.

Alkali Works Draft Order: No Objections

A PUBLIC inquiry was held on Wednesday at the Ministry of Health, London, by Dr. T. L. Bailey, chief inspector of alkali works, into the subject matter of the draft order to extend the provisions of the Alkali, etc., Works Regulation Act, 1906. Briefly, it is proposed to make a number of additions to the list of noxious gases and fumes in schedule one, and to extend schedule two to include other works than those already covered. Before hearing objections the inspector stated that the Order did not apply to Scotland. In certain directions chemical industry had extended, and in many works, not within the scope of the Act, processes were used which evolved much the same fumes and gases as in works which did. It was to form a safeguard against these, and to include certain other fumes and gases in the Act, that the present Order had been drafted. With regard to the extension of the list of noxious gases and fumes, Mr. W. Coleman, representing the National Benzole Association, asked whether the term "fumes from benzene works" was not too wide, and might it not in future lead to some contention? The Inspector said he thought it might be taken that the words related only to such fumes as were proved to be offensive or to be dangerous to health. A similar point was raised in regard to paraffin oil works by Mr. J. Cole, representing Shell-Mex, Ltd. No objections were raised to the draft order. Mr. W. J. U. Woolcock, representing the Association of the British Chemical Manufacturers, and Mr. J. Fottrell, representing the National Gas Council, were among those present.

Accident at Chemical Warfare Station

AN accident at the Chemical Warfare Experimental Station at Porton (Wiltshire), in which Lieut. Francis Mortimer Green lost his life, was the subject of an inquest on December 9. Acting Colonel Cave-Brown said that he and the young officer were testing charges which had been buried since May to see if they had perished normally. It was a safe experiment, and they found two charges in perfect order. An explosion occurred after he had left Green, who had undoubtedly carried on the test as he was intended to do, and stooped with his testing cell over the spot where the electric leads from the charges came above ground.

Sapper McCaffery said that he saw Mr. Green in the air when the explosion occurred. The Coroner, returning a verdict of "Accidental death," said an unfortunate mistake was made, but he could find no culpable negligence.

The Hexyl Resorcinol Appeal

THE hearing of the appeal in this action (see the last issue of THE CHEMICAL AGE), from Mr. Justice Astbury's decision, was continued this week. Sir A. Colefax, having explained the chemical principles involved in the case, explained the appellants' specification, and at the request of the Court immediately proceeded to read the judgment of Mr. Justice Astbury so that the Court might envisage the problem upon which they were to adjudicate. Sir Arthur said that the judge had throughout failed to appreciate his contention that the patent was essentially for the manufacture of non-toxic germicides. He then dealt with the evidence which had been given by various experts. The hearing was continued until Thursday, when the Court, having other business for the remainder of the term, the remainder of the case was held over until next term.

Alcohol Manufacture in Bombay

ATTENTION is drawn to the many opportunities for the manufacture in Bombay of industrial alcohol by the Director of Industries, in the Bombay Presidency. A small quantity of rectified spirit is manufactured in the Presidency while the bulk is imported from foreign countries, chiefly Java and Europe. There is a vast field combined with almost unlimited facilities for manufacturing industrial alcohol, and the raw material, mhowa or mhowra flowers, from which it is made in the Presidency, grow wild and in abundance in some parts.

Tariff Change

ITALY.—Magnesium sulphate for use in artificial silk manufacture has been added to the list of goods which may be imported duty free under temporary importation regulations.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Receivership

BENTHAM CHEMICAL CO., LTD. (R., 17/12/27.) H. B. Britcliffe, C.A., of County Bank Chambers, St. James Street, Accrington, was appointed Receiver and Manager on November 29, under powers contained in instruments dated May 2, 1927.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

BRUNNER MOND AND CO., LTD., Northwich, chemical manufacturers. (M., 17/12/27.) Registered November 28 (by order on terms), £96,000 mortgage, to Northwich U.D.C.; charged on land abutting on Alderley Road and Hartford Hill Estate, both Northwich. *Nil. April 12, 1927.

CLIFFORD AND HALL, LTD., London, E., producers of petroleum, etc. (M., 17/12/27.) Registered December 1, £1,000 debenture, to Mrs. A. M. Henmann, 16, Upper Park Road, Hampstead; general charge. *Nil. December 31, 1926.

CONSOL PRODUCTS, LTD., Sunbury Common, essence manufacturers. (M., 17/12/27.) Registered December 6, mortgage, to Bank; charged on land and buildings at Sunbury. *Nil. March 14, 1927.

Satisfactions

KEEPS, LTD., London, E.C., preservative manufacturers. (M.S., 17/12/27.) Satisfaction registered November 30, £1,250, registered January 18, 1921.

POMEROY (Mrs.), LTD., London, S.W., manufacturers of toilet requisites, etc. (M.S., 17/12/27.) Satisfaction registered December 1, £2,500, registered October 26, 1923.

London Gazette, &c.

Companies Winding Up Voluntarily

MITCHELL MILL CO., LTD. (C.W.U.V., 17/12/27.) By special resolution, November 17, confirmed December 3. F. W. Charlesworth, Chartered Accountant, 85, St. Petersgate Stockport, appointed as liquidator.

BENTHAM CHEMICAL CO., LTD. (C.W.U.V., 17/12/27.) H. B. Britcliffe, Chartered Accountant, County Bank Chambers St. James Street, Accrington, appointed as liquidator, December 5. Meeting of creditors at the County Hotel, Lancaster, on Wednesday, December 21, at 12 noon.

Bankruptcy Information

HUTCHISON, Leonard Victor Augustus, Albert Road, Whitefield, Lancaster, chemical manufacturer. (R.O., 17/12/27.) Receiving order, December 6. Debtor's petition.

New Companies Registered

CELLONOID, LTD. Registered December 7. Nom. capital, £3,000 in £1 shares. To acquire the secret knowledge appertaining to the manufacture of cellulose paint and lacquers and things of a like character, to adopt an agreement with W. Bennison, of 9, York Mansions, Earl's Court, S.W.5, and to carry on the business of manufacturers of the said paint and lacquers, and products of a like nature. Subscribers: A. M. Warlow, 19, Creffield Road, Ealing, W.5.. E. H. Robinson, J. F. Field, J. Horsfall.

HODDERS, LTD., 5, Nelson Street, Bristol. Registered as a "public" company on December 7. Nom. capital, £200,000 in 200,000 8 per cent. cumulative preference shares of 10s. each (with priority as to capital) and 2,000,000 ordinary shares of 1s. To acquire shares and/or business of Henry Hodder and Co., Ltd., manufacturing and wholesale and retail chemists and druggists. Directors: E. L. Lees, E. Carpenter, G. Morgan.

MACARTHUR AND JACKSON, LTD., 98, Dobbies Loan, Glasgow, C.4. Registered in Edinburgh December 7. Nom. capital, £8,000 in £1 shares. Manufacturers, producers and distillers of and dealers in mineral, animal, vegetable and natural oils, greases, paints, soaps, etc. Directors: R. W. McAlley, W. W. Allan.

THE INTERNATIONAL ARTIFICIAL SILK CO., LTD., 85, London Wall, London, E.C.2. Registered on December 9 as a "public" company. Nom. capital of £660,000 in 5s. shares. To adopt agreements with George MacElwee and to carry on the business of artificial silk manufacturers and merchants, manufacturers of and dealers in chemicals, wood pulp, and fibrous substances, and such other raw materials and things as may be capable of use in the manufacture of pulp and artificial silk, etc. Directors: A. Clark, J.P., Comte Jean de Nicolay, F. R. A. Shortis, Lt.-Col. R. W. Cox, J. W. Lomax, G. Blay, A. N. Harper.

The Alkali Industry in Canada

ALTHOUGH Canada possesses large deposits of common salt her production of sodium alkalis does not satisfy her requirements, total imports of these products for the year ending March 31, 1927, being valued at $1,285,849, states a communication from the Dominion Department of Mines. Caustic soda is produced only by one firm in Ontario, while another firm is the sole manufacturer of soda ash, the total value of these products in 1926 amounting to over $2,000,000.

For the year ending March 31, 1927, imports of caustic soda, chiefly from the U.S., were valued at $377,388, and during the same period 1,678,703 lb. of soda ash, valued at $27,819, was imported, mainly from the United Kingdom and the U.S.

No sodium bicarbonate is produced in Canada, but for the period under consideration 10,293,567 lb., valued at $175,688, was imported mainly from the U.S. Glauber's salt occurs naturally as a solid and as brine in the alkaline lakes in the West. On account of its high water content it would be necessary to dehydrate the material so as to reduce transportation costs. Salt cake is obtained as a by-product in the manufacture of hydrochloric acid, while nitre cake is obtained as a by-product in nitric acid.

For the year ending March 31, 1927, Glauber's salt to the value of $10,454 was imported, and in the same period $644,950 worth of salt cake was imported mainly from the U.S. and the United Kingdom.

Importations of nitre cake amounted to 23,866,694 lb., valued at $48,550.

Domestically, three firms produce Glauber's salt, products being valued at $33,559 in 1925. In the same year five firms manufactured salt cake to the value of $40,878, and nitrecake, worth $4,833, was made by two firms engaged in its manufacture.

Adjustable Dash Pot for Cement Testing

DURING the carrying out, at the Imperial Institute, South Kensington, London, of investigations on Portland cement and on cement materials received from overseas, it has been found necessary to perform tests involving the determination of the depth to which a weighted plunger will sink into a neat cement paste. When testing was commenced at the cement testing laboratory of the Imperial Institute in 1915, it was observed that when the plunger was lowered into the paste by hand, there was a tendency on the part of the operator to impede its fall slightly as the 6 mm. end point was approached, and, since different operators were engaged upon the same test, it appeared desirable to eliminate this personal factor and to secure uniformity in working by employing a mechanical device. An adjustable dash pot, which is intended for attachment to the usual form of Vicat "needle" apparatus, has been designed at the Imperial Institute by Mr. A. T. Faircloth with the object of overcoming the above-mentioned error in testing, and ensuring the rod of the Vicat "needle" being lowered under standard conditions.